# CITY OF HILLSBORO



# **INVITATION TO BID**

# **FOR**

# NW 253<sup>rd</sup> Avenue Creek Crossing Culvert Systems

# Address bids to:

Charlie Shell

City of Hillsboro Engineering Dept.

150 East Main Street,

Hillsboro, OR 97123

# **Refer questions to:**

Charlie Shell

City of Hillsboro Engineering Department

150 East Main Street,

Hillsboro, OR 97123

503-681-6252 voice

503-681-6245 fax

Email: Charlie.shell@hillsboro-oregon.gov

# **Bids due:**

By 2:00 PM, Tuesday, August 13<sup>th</sup>, 2013
Envelopes must be sealed, plainly marked:
"Bid submittal for NW 253<sup>rd</sup> Avenue
Culverts" sent to the attention of Charlie
Shell, Buyer, and include the name and
address of the bidder. The City of Hillsboro
reserves the right to reject any or all bids.

Issued By
City of Hillsboro Engineering Department
150 East Main Street
Hillsboro, Oregon 97123
(503) 681-6146

August 5th, 2013

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# I. ADVERTISEMENT

# CITY OF HILLSBORO INVITATION TO BID

# NW 253<sup>rd</sup> Avenue Creek Crossing Culvert Systems

This is an Invitation to Bid (ITB) to provide and deliver two open bottom pre-cast roadway culverts, footings and wing walls to the City of Hillsboro for use in the construction of two roadway creek crossings. The creek crossing culvert openings shall be sized as follows;

Crossing One – A span of 15 feet and a rise of approximately 3 feet and 3 inches. Crossing Two – A span of 22 feet and a rise of approximately 5 feet and 1 inch.

Installation of the two creek crossing culvert systems will be completed by others.

The materials shall conform to or be equivalent to the specifications contained in the invitation to bid. The City of Hillsboro intends to purchase these pre-cast concrete creek crossing culvert systems in advance of beginning project construction to have them available to meet a 2013 construction completion schedule.

It is the City's desire to have the culvert systems ready for installation and delivered to the construction site no later than October 1, 2013. Selection of the winning bid will not be based upon cost alone; but will also be evaluated based upon the ability to meet the desired schedule. The ability to deliver one or both of the finished culvert systems prior to October 1, 2013 will be considered in the award. The anticipated time of award for this contract is August 21, 2013.

Bid documents may be obtained from the office of the City Engineer, City of Hillsboro Civic Center, Fourth Floor, 150 East Main Street, Hillsboro, Oregon 97123 for \$15.00 (non refundable). Please call the Public Works Department, Engineering Division at 503-681-6146 for additional information.

The bidding documents may be reviewed at the above address, at many of the area plan centers, and on the City's website.

Sealed bids will be received only at the office of City Engineer, City of Hillsboro Civic Center, Fourth Floor, 150 East Main Street, Hillsboro, Oregon 97123, before 2:00 p.m. on Tuesday, August 13, 2013.

Any or all bids may be rejected by the City of Hillsboro.

Dated this 2nd day of August, 2013

CITY OF HILLSBORO

City Recorder

Please Publish:

Argus: August 7 and 9, 2013

Daily Journal: August 5 and 7, 2013

# II. INVITATION TO BID (ITB)

This is an Invitation to Bid (ITB) to provide two Pre-Cast Concrete Open Bottom Roadway Culvert Systems to the City of Hillsboro for use in the construction of two roadway creek crossings.

Sealed bids will be received until 2:00 pm, on the date listed on page 1 of this Invitation to Bid (ITB), at the office of City Engineer, City of Hillsboro Civic Center, Fourth Floor, 150 East Main Street, Hillsboro, Oregon 97123.

**BIDDERS NOTE**: Be sure to read the entire document and all attachments. By submitting a bid in response to this specific Invitation To Bid, bidder is affirming they have completely read all the specifications, terms, conditions, and requirements of the bid. Bidder also affirms that the bid submitted is in response to the bid language and requirements for this specific solicitation and no assumptions have been made as to any previously issued solicitation.

**CHANGES TO BID SPECIFICATIONS**: Bidders are cautioned that the City of Hillsboro's 'official' response to any questions or requests will be through direct letters or the addenda process. Bid requirements will change only if confirmed by a written addendum to the ITB, issued by the City Engineering Department.

**ADDENDA** as they pertain to this ITB will be faxed, emailed or mailed to everyone on the list of bid document recipients maintained by the City Engineering Department.

No consideration will be given to any claim resulting from bidding without comprehending all instructions, specifications, and/or work conditions.

**METHOD OF BIDDING:** Bidders are required to provide pricing and delivery schedules, for each of the bid items listed on the Pricing Form that the bidder proposes to furnish. It is the City's desire to have the pre-cast concrete culvert systems ready for installation and delivered to the construction site no later than October 1st, 2013. Selection of the winning bid will not be based upon cost alone; but will also be evaluated based upon the ability to meet the desired schedule. The ability to deliver one or both of the finished culvert systems prior to October 1, 2013 will be considered in the award.

UNALTERED FORM REQUIRED: THE BID RESPONSE SHALL BE MADE ON THE FORM(S) PROVIDED IN THE INVITATION TO BID AND AS PRESCRIBED BY THE ENGINEERING DEPARTMENT. THE BIDDER MAY NOT ALTER, MODIFY, OR CHANGE THE BID FORM(S) EXCEPT AS DIRECTED IN THE ORIGINAL CONTRACT DOCUMENTS, BY BID ADDENDUM OR AS PROVIDED BELOW. ANY OTHER FORM OF BID RESPONSE IS INVALID. BIDDERS ARE REQUIRED TO USE THE FORM(S) PROVIDED WITHIN THE INVITATION TO BID OR EXACT REPRODUCTION THEREOF. THIS PROVISION DOES NOT PRECLUDE A BIDDER FROM REPRODUCING AND COMPLETING THE FORM OR FORMS ELECTRONICALLY WITH A COMPUTER WORD PROCESSING PROGRAM. WHETHER MANUALLY OR COMPUTER PREPARED, NO CHANGES SHALL BE MADE IN PHRASEOLOGY OF THE FORMS OR IN THE BID ITEMS, OR THE BID SHALL BE REJECTED.

BIDDERS ARE NOT TO SUBMIT A SEPARATE EDIT ORIALIZED VERSION OF THIS DOCUMENT; THIS IS <u>NOT</u> A REQUEST FOR PROPOSAL (RFP). FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT IN THE REJECTION OF THE BID SUBMITTED.

### III. INSTRUCTIONS TO BIDDERS

For The Purchase of Goods

All bids are subject to the provisions and requirements of the Oregon Revised Statutes, the State of Oregon Attorney General's Model Public Contract Rules and the Administrative Rules of the City of Hillsboro

# **BID PREPARATION:**

**BID FORMAT:** Bids must be typewritten or prepared in ink and must be submitted on the form provided in the Invitation to Bid or Request for Proposal. No oral, telegraphic, telephone or facsimile bids will be accepted unless specified in the bidding documents.

In a joint effort to save costs, reduce waste and produce energy savings, bidders are encouraged to use standard 8-1/2" x 11" paper with 2-hole (top) fasteners, and recyclable binders (when use of binders is indicated). Bidders are encouraged to refrain from submitting bid responses in 3-ring binders, spiral bindings, and other nonrecyclable presentation folders.

**CONFORMANCE TO BID REQUIREMENTS:** Bids must conform to the requirements of the Invitation to Bid or Request for Proposal. All necessary attachments (residency statement, bid bond, references, descriptive literature, etc.) must be submitted with the bid and in the required format. Bid prices must be for the unit indicated on the bid. Failure to comply with all requirements may result in bid rejection.

USE of BRAND or TRADE NAMES: Any brand or trade names used by the City in bid specifications are for the purpose of describing and establishing the standard of quality, performance and characteristics desired and are not intended to limit or restrict competition. Bidders may submit bids for substantially equivalent products to those designated unless the Invitation to Bid provides that a specific brand is necessary because of compatibility requirements, etc. All such brand substitutions shall be subject to purchaser's approval.

**PRODUCT IDENTIFICATION:** Bidders must clearly identify all products bid. Brand name and model or number must be shown. The City reserves the right to reject any bid when the product information submitted with the bid is incomplete.

**DELINQUENT OREGON TAXES:** Bidders must certify, under penalty of perjury, that they are not in violation of any Oregon tax laws. No contract for the purchase of goods and/or services will be awarded to a bidder who cannot so certify.

**EXCEPTIONS:** Any deviation from bid specifications, terms and conditions may result in bid rejection.

**DELIVERY:** Delivery time must be shown in number of calendar days after receipt of order.

**SIGNATURE ON BID:** Bids must be signed in ink by an authorized representative of the bidder. Signature on a bid certifies that the bid is made without connection with any person, firm or corporation making a bid for the same goods and/or services and is in all respects fair and without collusion or fraud.

Signature on a bid also certifies that the bidder has read and fully understands all bid specifications, terms and conditions. No consideration will be given to any claim resulting from bidding without comprehending all requirements of the Invitation to Bid or Request for Proposal.

BID MODIFICATION: Modifications or erasures made before the person signing the bid must initial bid submission in ink. Bids, once submitted, may be modified in writing before the time and date set for bid closing. Any modifications shall be prepared on company letterhead, signed by an authorized representative, and state that the new document supersedes or modifies the prior bid. Modification must be submitted in a sealed envelope clearly marked "Bid Modification" and identify the bid number and closing date. Bidders may not modify bids after bid closing time.

**BID WITHDRAWALS:** Bids may be withdrawn in writing on company letterhead signed by an authorized representative and received by the Engineering Department prior to bid closing time. Bids may also be withdrawn in person before bid closing time upon presentation of appropriate identification.

**PROTEST OF BID SPECIFICATIONS:** A bidder who believes that bid specifications are unnecessarily restrictive or limit competition may submit a protest, in writing, to the Engineering Department. To be considered, protests must be received at least five days before the bid closing date. Envelopes containing protests should be marked as follows:

Bid Specification Protest Bid Number Closing Date

**BID SUBMISSION:** Sealed bids must be received and time-stamped by the Engineering Department prior to bid closing time. No bid received after bid closing time will be considered. To assure that your bid receives priority treatment within our mailing system please mark as follows:

Project Name, Bid Due Date: August 13, 2013 Time of Opening: 2:00 PM

CITY OF HILLSBORO ENGINEERING DEPARTMENT 150 EAST MAIN STREET, 4TH FLOOR HILLSBORO, OR 97123

The Engineering Department shall not be responsible for the proper identification and handling of any bid not submitted in a timely manner.

**BID OPENING:** Bids will be opened at the scheduled opening time at the Engineering Department (unless otherwise specified). Bidders may be present; however, award decisions will not be made at the opening.

### **BID EVALUATION AND AWARD:**

**Evaluation Criteria:** Bids will be awarded based upon the evaluation criteria in the Invitation to Bid or Request for Proposal or in Oregon administrative rules or laws.

Ordinarily, bids will be evaluated to identify the "lowest responsible bidder." The "lowest responsible bidder" is the lowest bidder who has substantially complied with all requirements of the Invitation to Bid and who can be expected to deliver promptly and perform reliably.

However, it is the City's desire to have the pre-cast concrete culvert systems ready for installation and delivered to the construction site no later than October 1st, 2013. Selection of the winning bid will not be based upon cost alone; but will also be evaluated based upon the ability to meet the desired schedule. The ability to deliver one or both of the finished culvert systems prior to October 1, 2013 will be considered in the award. The City reserves the right to award the bid to the bidder with the most advantageous combination of price and delivery schedule that is in the best interest of the City to meet the 2013 project completion schedule. Providing a bid with delivery dates past October 1, 2013 will be considered nonresponsive.

**RECIPROCAL PREFERENCE:** In determining the "lowest responsible bidder," the City will add a percent increase to each out-of-state bidder's bid price which is equal to the percent given to local bidders in that bidder's home state.

**DELIVERY:** Delivery of the culvert systems on or before October 1, 2013 is critical in completing the installation by the end of October. Missing one or both delivery dates in the bidder's bid shall constitute a breach in the contract.

**CASH DISCOUNTS:** Cash discounts will not be considered for award purposes unless stated in the bid documents.

**PAYMENT:** Bids that require payment in less than 30 days after receipt of invoice or delivery of goods, whichever is later, may be rejected.

**METHOD OF AWARD:** The City reserves the right to make the award to the Responsive Bidder submitting the most Advantageous Responsive bid by item, and by delivery schedules, whichever is in the best interest of the City. The City also reserves the right to make multiple awards.

**ESTIMATED PURCHASES**: The City in no way implies or guarantees that any amount will be purchased during the term of any contract resulting from this invitation to bid (ITB).

**BID REJECTION:** The City reserves the right to reject any and all bids.

INTENT TO AWARD NOTICE: Pursuant to OAR 137-47-0610, the City shall serve written notice to all bidders of the City's intent to make the award to the lowest, responsive bidder(s). Bidders shall have five (5) business days within which they can view the bid file(s) by appointment or request any clarifications, etc. concerning the award(s). After the expiration of this five (5) day period, the City shall proceed with the formal award of the contract(s). If it is determined by the City that there are no bidders that could be grieved by the award of this solicitation, the City reserves the right to waive or shorten the protest period and to proceed with award.

**PROTEST OF AWARD:** Bidders shall have five (5) business days, after the City Engineering Office announces their intent to award, within which to file a written protest. OAR 137-047-0740 provides that the protest must specify the grounds upon which the protest is based. The Engineering Department will not accept protests submitted more than five (5) business days after the intent to award notice. After expiration of the five (5) day period and resolution of all protests, the Engineering Department will proceed with final award.

UNALTERED FORM REQUIRED. The Bid response shall be made on the form(s) provided in the Invitation to Bid and as prescribed by the Engineering Department. The Bidder may not alter, modify, or change the Bid form(s) except as directed in the original Contract Documents or by Bid addendum. Any other form of Bid response is invalid. Bidders are required to use the form(s) provided within the Invitation to Bid or exact reproduction thereof. This provision does not preclude a Bidder from reproducing and completing the form or forms electronically with a computer word processing program. Whether manually or computer prepared, no changes shall be made in phraseology of the forms or in the Bid items, or the Bid shall be rejected.

### IV. STANDARD TERMS AND CONDITIONS

**Contracts For The Purchase Of Goods** 

### 1. DEFINITIONS:

"Addendum" or "Addenda" means an addition or deletion to, a material change in, or clarification of, the ITB. Addendum or Addenda shall be labeled as such and shall be made available to all interested Bidders.

"Authorized Purchaser" means the City of Hillsboro, acting by and through its Departments and participants who submit Purchase Orders to Contractor. "Authorized Purchaser", "Department" and "City" as used herein shall be synonymous with "Buyer" as defined at ORS 72.1030(a).

"Bid" means a competitive offer, binding on the Bidder and submitted in response to an Invitation to Bid.

"Bidder" means an Entity or person that submits a Bid in response to an Invitation to Bid.

"City" means the City of Hillsboro, acting by and through its Departments.

"Contract" means the entire written agreement between the parties, including but not limited to the Invitation to Bid or Request for Proposal and its specifications, terms and conditions; solicitation instructions; solicitation addenda and contract amendments, if any; the purchase order or price agreement document.

"Contractor" means a person or organization with whom the City of Hillsboro has contracted for the purchase of goods. The terms "Contractor" and "Seller" as used in the Uniform Commercial Code (ORS chapter 72) are synonymous; "ORS' means the Oregon Revised Statutes;

"Department" means the City department making the purchase.

"Entity" means a person capable of being legally bound, including but not limited to the following: an individual; a sole proprietorship; a limited liability company; a corporation, foreign corporation, or nonprofit corporation; a profit and nonprofit unincorporated association; a business trust; a partnership; two or more persons having a joint or common economic interest; or a government or governmental subdivision.

"Price Agreement" means this Solicitation document and all Addenda thereto, and the successful Bidder's response.

"UCC" means the Uniform Commercial Code, ORS chapter 72, as amended from time to time.

2. WORKERS' COMPENSATION: The Contractor, its subcontractors, if any, and all subject employers providing work, labor, or materials under this Contract are either employers under the Oregon Workers' Compensation Law and shall comply with ORS 656.017, which requires them to provide workers' compensation coverage that satisfies Oregon Law for all their subject workers or they are employers that are exempt under ORS 656.126.

- 3. STANDARD & SPECIAL TERMS & CONDITIONS: ORDER OF PRECEDENCE: These printed Terms and Conditions are the Standard Terms and Conditions for the City of Hillsboro Contracts for the purchase of goods. The City may also provide additional "special terms and conditions" elsewhere in this Price Agreement which shall apply only to this Price Agreement. Whenever possible, all terms and conditions are to be harmonized. In the event of a conflict between the standard and "special terms and conditions", the "special terms and conditions" take precedence, unless the standard term(s) in question is/are required by law. In the event of any other conflict, 1) the special terms and conditions, 2) these Standard Terms and Conditions, 3) the Invitation to Bid or Request for Proposal, and 4) the proposal or response thereto shall be interpreted in the foregoing order of precedence. By signing this ITB, Contractor accepts these terms and conditions and agrees that, in the event of a conflict, all the terms and conditions of this Price Agreement shall supersede all conflicting preprinted terms and conditions on any forms used by the Contractor or any Authorized Purchaser.
- **4. DELIVERY:** Responsibility and liability for loss or damage shall remain with the Contractor until final inspection and acceptance when responsibility shall pass to the City except as to latent defects, fraud and Contractor's warranty obligations. All deliveries shall be F.O.B. destination with all transportation and handling charges paid by Contractor, unless specified otherwise in the solicitation documents.
- **5. INSPECTIONS:** Goods furnished under this contract shall be subject to inspection and test by the Authorized Purchaser at times and place determined by the Authorized Purchaser. If the Authorized Purchaser finds goods furnished to be incomplete or not in compliance with solicitation specifications, the Authorized Purchaser may reject the goods and require Contractor to either correct them without charge or deliver them at a reduced price, whichever is equitable under the circumstances. If Contractor is unable or refuses to cure any defects within a time deemed reasonable by the Authorized Purchaser, the Authorized Purchaser may reject the goods and cancel the contract in whole or in part. Nothing in this paragraph shall in any way affect or limit the Authorized Purchaser's rights as buyer, including the rights and remedies relating to rejection under ORS 72.6020 and revocation of acceptance under ORS 72.6080.
- 6. WARRANTIES: Unless otherwise stated, all goods purchased pursuant to this Price Agreement shall be free and clear of any liens or encumbrances and shall be new (and, if applicable, the current model) and shall carry full manufacturer warranties. Contractor warrants all goods delivered to be free from defects in labor, material design and manufacture to be in compliance with the specifications set out in the Contract including but not limited to quality, performance and health and safety specifications. All implied and express warranty provisions of the UCC are hereby incorporated by reference. Further, Contractor represents and warrants to Authorized Purchaser that Contract represents and that the Contract, when executed and delivered, shall be a valid and

binding obligation of Contractor enforceable in accordance with its terms. The warranties set forth in this section are in addition to, and not in lieu of, any other warranties provided

- **7. CASH DISCOUNT:** If the Authorized Purchaser is entitled to a cash discount, the period of computation shall commence on the date the entire order is delivered or the date the invoice is received, whichever is later.
- **8. PAYMENT:** Payment for completion of City contracts is normally made within 30 days following the date the entire order is delivered or the date the invoice is received, whichever is later.
- **9(a). PRICE AGREEMENT TERMINATION:** This Price Agreement may be terminated at any time by mutual written consent of the parties or the City may, at its sole discretion, terminate this Price Agreement, in whole or in part, upon 30 days notice to Contractor.
- **9(b). CONTRACT TERMINATION:** A) A Contract may be terminated at any time by mutual written consent of the parties or the Authorized Purchaser may, at their sole discretion, terminate the Contract upon written notice to Contractor.
- B) The Authorized Purchaser may terminate the Contract, in whole or in part, immediately upon notice to Contractor, or at such later date as the Authorized Purchaser may establish in such notice, upon the occurrence of any of the following events: (i) Authorized Purchaser fails to receive funding, or appropriations, limitations or other expenditure authority at levels sufficient to allow Authorized Purchaser, in the exercise of its reasonable discretion to continue with the Contract or; (ii) Federal or state laws, regulations or guidelines are modified or interpreted in such a way that either the purchase of goods pursuant to the Contract is prohibited or Authorized Purchasers would be prohibited from paying for such goods from planned funding sources; or (iii) Contractor commits a material breach or default of any covenant, warranty, guarantee or obligation under the Contract, fails to perform under the Contract within the time specified herein or any extension thereof, or fails to pursue performance of the Contract so as to endanger Contractor's performance under the Contract in accordance with its terms, and such breach, default or failure is not cured within ten (10) business days after delivery of Authorized Purchaser's notice or such longer period as Authorized Purchaser may specify in such notice. Pursuant to this section 9(b), upon receipt of written notice of termination, Contractor shall stop performance under the Contract as directed by Authorized Purchaser.
- C) Termination under any provision of the Contract shall not extinguish or prejudice the Authorized Purchaser's right to enforce the Contract with respect to any breach of a Contractor warranty or any defect in or default of Contractor's performance that has not been cured, including any right of the Authorized Purchaser to indemnification by Contractor. If the Contract is so terminated, Contractor shall be paid in accordance with the terms of the Contract with regards to goods already delivered and accepted.
- **10. FORCE MAJEURE:** Neither the City, Authorized Purchaser nor Contractor shall be held responsible for delay or default caused by fire, riot, acts of God, war, or any other cause which is beyond the party's reasonable control. Contractor shall,

- however, make all reasonable efforts to remove or eliminate such a cause of delay or default and shall, upon the cessation of the cause, diligently pursue performance of its obligations under the Contract. The City or the Authorized Purchaser may terminate the Contract upon written notice after reasonably determining that such delay or default will likely prevent successful performance of the Contract. Termination pursuant to this section affects only the Contract in question and not the underlying Price Agreement.
- **11. BREACH OF CONTRACT:** Should Contractor breach any of the provisions of this contract, the City reserves the right to cancel this contract upon written notice to Contractor. Contractor shall be liable for any and all damages suffered by the City or Authorized Purchaser as the result of Contractor's breach of contract, including but not limited to incidental and consequential damages, as provided in ORS 72.7110 to 72.7170.
- **12. HOLD HARMLESS:** Contractor shall indemnify, defend and hold harmless the City and its Departments, officers, employees, agents, volunteers, members and Authorized Purchaser, from all claims, suits or actions of any nature arising out of or related to the activities of Contractor, its officers, subcontractors, agents or employees under this contract.
- 13. ACCESS TO RECORDS: The Contractor shall maintain all fiscal records relating to this contract in accordance with generally accepted accounting principles and shall maintain any other records relating to this contract in such a manner as to clearly document Contractor's performance hereunder. The City and its Departments, Authorized Purchasers, the federal government and their duly authorized representatives shall have access to such fiscal records and to all other books, documents, papers, plans and writings of Contractor which relate to this contract, to perform examination, and audits and make excerpts and transcripts. Contractor shall retain and keep accessible all such fiscal records, books, documents, papers, plans, and writings for a minimum of 3 years, or such longer period as may be required by applicable law following final payment and termination of this Contract, or until the conclusion of any audit, controversy or litigation arising out of or related to the Contract, whichever date is later.
- **14. AMENDMENTS:** The terms of this contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever without prior written approval of the City.
- **15. SEVERABILITY:** If any provision of this contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected; and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the particular provision held to be invalid.
- **16. WAIVER:** Failure of the City to enforce any provision of this contract shall not be a waiver or relinquishment by the City of its right to such performance in the future nor of the right to enforce any other provisions of this contract.
- 17. GOVERNING LAW; JURISDICTION; VENUE: This contract shall be governed and construed in accordance with the laws of the State of Oregon, without resort to any jurisdiction's conflict of laws rules or doctrines. Any claim, action, suit, or proceeding (collectively, "the claim") between the City and the

contractor that arises from or relates to this contract or price agreement shall be brought and conducted solely and exclusively within the Circuit Court of Washington County for the State of Oregon. Provided, however, if the claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. Contractor hereby consents to the in personam jurisdiction of said courts.

Any Claims between Contractor and any other Authorized Purchaser besides the City or its Departments, that arise or relate to the Contract shall be brought and conducted solely and exclusively within the Circuit Court of the county in which such Authorized Purchaser resides, or at Authorized Purchaser's option, within such other county as the Authorized Purchaser shall be entitled under the laws of the relevant jurisdiction to bring or defend Claims. If any such Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District in which such Authorized Purchaser resides.

### 18. ASSIGNMENT/SUBCONTRACT/SUCCESSORS:

Contractor shall not assign, sell, transfer, or subcontract rights, or delegate responsibilities under this contract, in whole or in part, without the prior written approval of the Authorized Purchaser. No such written approval shall relieve Contractor of any obligations of this contract, and any transferee or subcontractor shall be considered the agent of Contractor. Contractor shall remain liable to the City under the contract as if no such assignment, transfer, or subcontract had occurred. The provisions of this contract shall be binding upon and shall inure to the benefit of the parties to the contract and their respective successors and assigns.

# 19. COMPLIANCE WITH APPLICABLE LAWS:

Contractor shall comply with all federal, state and local laws, codes, regulations and ordinances applicable to the provision of goods under this contract, including, without limitation, the provisions of ORS 279B.220, 279B.235, and 279B.230. Without limiting the generality of the foregoing, Contractor expressly agrees to comply with (i) Title VI of the Civil Rights Act of 1964; (ii) Section V of the Rehabilitation Act of 1973; (iii) the Americans with Disabilities Act of 1990 (Pub L No. 101-336). ORS 659.425, and all amendments of and regulations and administrative rules established pursuant to those laws; and (iv) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations. When any employees of the contractor are conducting business on the City of Hillsboro's premises, they must also comply with applicable City policy to include: Misconduct and Discipline, Personal Appearance and Conduct, Safety, Harassment, E-Mail, Internet Usage, and Drug and Alcohol Free Workplace. Copies of each policy can be retrieved from the Human Resources Department at 150 East Main St, 2<sup>nd</sup> Floor, Hillsboro, OR, 97123.

**20. PAYMENTS REQUIRED By ORS 279B.220:** For all goods provided under this contract, Contractor shall: (i) pay promptly, as due, all persons supplying labor or material; (ii) pay all contributions or amounts due the industrial Accident Fund from the contractor or any subcontractors; (iii) not permit any lien or claim to be filed or prosecuted against the City on account of any labor or material furnished; (iv) be responsible for all federal, state and local taxes applicable to any compensation or payments

paid to the Contractor under this Contract and, unless the Contractor is subject to backup withholding, the City will not withhold from such compensation or payments any amount(s) to cover the Contractor's federal or state tax obligation.

# 21. CITY PAYMENT OF CONTRACTOR CLAIMS: If Contractor fails, neglects or refuses to pay promptly, as due, any claim for labor or services furnished to the Contractor or any subcontractor by any person in connection with the goods provided under this contract, the City may pay such claim and charge the amount of the payment against funds due or to become due the Contractor under this contract. The payment of a claim by the City pursuant to this paragraph shall not relieve the Contractor or its surety, if any, from obligation with respect to any unpaid claims.

# 22. HOURS OF LABOR:

- 1) (a) Every public contract shall also contain a condition that no person shall be employed for more than 10 hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely requires it, and in such cases, except in cases of contracts for personal services as defined in ORS 279A.055, the employee shall be paid at least time and a half pay:
  - (A) For all overtime in excess of eight hours a day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday; or
  - (B) For all overtime in excess of 10 hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday; and
  - (C) For all work performed on Saturday and on any legal holiday specified in ORS 279B.235.
- (b) An employer must give notice to employees who work on a public contract in writing, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that the employees may be required to work.
- **23. SAFETY AND HEALTH REQUIREMENTS:** Goods and services provided under this contract shall comply with all federal Occupational Safety and Health Administration (OSHA) requirements and with all Oregon safety and health requirements, including those of the State Workers' Compensation Division.
- **24. AWARD TO FOREIGN CONTRACTOR:** If the amount of this contract exceeds \$10,000 and if the Contractor is not domiciled in or registered to do business in the State of Oregon, Contractor shall promptly provide to the Oregon Department of Revenue and the Secretary of State Corporation Division all information required by those agencies relative to this contract. The City shall withhold final payment under this contract until Contractor has met this requirement.
- **25. RECYCLABLE PRODUCTS:** Contractors shall use recyclable products to the maximum extent economically feasible in the performance of this contract.
- **26. MATERIAL SAFETY DATA SHEET:** Contractor shall provide the City and Authorized Purchasers with a Material Safety Data Sheet as defined by the Occupational Safety and Health Administration (OSHA) for any goods provided under this

Contract which may release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use. In addition, Contractor must label, tag or mark such goods.

27. INTERGOVERNMENTAL COOPERATIVE PURCHASING: Pursuant to ORS 279A, other public agencies shall have the ability to purchase the awarded goods and services from the awarded Contractor(s) under terms and conditions of the resultant contract.

Any such purchases shall be between the Contractor and the participating public agency and shall not impact the Contactor's obligation to the City of Hillsboro. Any estimated purchase volumes listed herein do not include other public agencies and the City of Hillsboro makes no guarantee as to their participation.

Any bidder, by written notification included with their solicitation response, may decline to extend the prices and terms of this solicitation to any and/or all other public agencies.

Please indicate your acceptance or decline on the signature page.

**28. ASSIGNMENT OF ANTITRUST RIGHTS:** By entering into a contract or price agreement, the contractor, for consideration paid to the contractor under the contract, does irrevocably assign to the City of Hillsboro any claim for relief or cause of action which the contractor now has or which may accrue to the contractor in the future, including at the City's option, the right to control any such litigation on such claim for relief or cause of action, by reason of any violation of 15 USC ss. 1-15 or ORS 646.725 or ORS 646.730, in connection with any goods or services provided to the contractor by any person, which goods or services are used, in whole or in part, for the purpose of carrying out the contractor's obligations under this contract.

In the event the contractor hires subcontractors to perform any of the contractor's duties under the contract, the contractor shall require the subcontractor to irrevocably assign to the City of Hillsboro, as a third party beneficiary any right, title or interest that has accrued or may accrue to the subcontractor by reason of any violation of 15 USC ss. 1-15, ORS 646.725 or ORS 646.730, including at the City's option, the rights to control any litigation arising thereunder, in connection with any goods or services provided to the subcontractor by any person, in whole or in part, for the purpose of carrying out the subcontractor's obligations as agreed to by the contractor in pursuance of the completion of the contract.

In connection with this assignment, it is an express obligation of the contractor that it will take no action, which will in any way diminish the value of the rights conveyed or assigned hereunder to the City of Hillsboro. It is an express obligation of the contractor to advise the City Attorney:

- 28.1 In advance of its intention to commerce any action on its own behalf regarding such claims for relief or causes of action.
- 28.2 Immediately, upon becoming aware of the fact that an action has been commenced on its own behalf by some other person or persons, of the tendency of such action; and

28.3 The date on which it notified the obligor(s) of any such claims for relief or causes of action of the fact of its assignment to the City of Hillsboro.

Furthermore, it is understood or agreed that in the event that any payment under any such claim is made to the contractor, it shall promptly pay over to the City of Hillsboro its proportionate share thereof, if any, assigned to the City hereunder.

- **29. TIME IS OF THE ESSENCE**: Contractor agrees that time is of the essence under the Contract.
- **30. INDEPENDENT CONTRACTOR STATUS.** The service or services to be rendered under this contract are those of an independent contractor. Contractor is not an officer, employee or agent of the City of Hillsboro or State of Oregon, as those terms are used in ORS 30.265.

### 31. CITY'S EXPECTATION.

- 31.1 The contractor shall comply with all the specifications requirements as stated.
- 31.2 It is the contractor's duty to conform to the requirements of this contract.
- 31.3 Expectations include but are not limited to the prompt delivery of the goods specified in this ITB.
- 31.4 Unless otherwise stated the contractor shall provide the goods specified that conform to the highest and best standards in the industry.

### 32. FAILURE TO PERFORM:

- 32.1 The City may withhold funds if the contractor fails to perform the work or provide the products ordered in accordance with the specifications and bid delivery dates
- 32.2 The City may require additional work without any additional payments should the contractor fail to perform.
- 32.3 The City may declare the contractor in default and terminate this contract.

# **33. LIQUIDATED DAMAGES:**

33.1 Failure to deliver the precast concrete culvert systems by the specified time will result in damages to the City. The parties to this contract agree that establishing the exact amount of damages the City will incur will be difficult. In order to compensate the City, the parties to this contract have estimated the amount the City would be damaged for every calendar day delivery is delayed. Consequently, the Contractor agrees to pay the City the sum of \$1,600 per day, not as a penalty but as liquidated damages, for each day elapsed beyond the delivery date set forth in the bid document. The total liquidated damages shall be deducted from the final payment due the Contractor.

The City may waive its right to claim part or all of the liquidated damages due under this provision, but such full or partial waiver shall not negate or abridge any other right of action the City may have to enforce the provisions of this Contract. Contractor will not contest such sums as being other than a reasonable measure of delay damages in the event those damages become payable under these provisions.

# V. GENERAL SPECIFICATION REQUIREMENTS

**REFERENCES:** Not required.

# VI. DETAILED SPECIFICATIONS FOR

# NW 253<sup>rd</sup> Avenue Culverts

The pre-cast concrete culvert systems shall be as shown on the attached plans and bid documents <u>or</u> approved equal and shall be designed and constructed in accordance with the best workmanship of the best quality and constructed with due consideration to the nature and distribution for the intended use and load to be sustained. All components supplied shall be certified by a responsible individual of the company to meet the engineered specifications. Paper copies of said certifications shall be made available to the City 5 days prior to delivery. Should the bidder wish to propose an "equal" product, the bidder shall be responsible for providing all required engineering and associated documentation to deem their proposed product to be of equal quality. Alternate proposals shall also provide design and details required for the associated headwalls, wing walls, and footings. The price bid shall include delivery to the construction site (F.O.B.).

### **BIDDER REQUIREMENTS**

The bidder shall comply with the following provisions and instructions.

The City of Hillsboro reserves the right to reject any or all bids or to accept any bid presented which is deemed the most advantageous price and schedule which are best suited to the interest of the City.

To be delivered FOB Destination at a location to be determined within one mile of the intersection of NW 253<sup>rd</sup> Avenue and NW Evergreen Road, Hillsboro, OR 97123 for the smaller culvert system and within one mile of the intersection of NW Meek Road and NW Brookwood Parkway, Hillsboro, OR 97123 for the larger culvert system. The City will be responsible to provide any construction access necessary to allow the materials to be trucked to the point of delivery.

### Intent

It is the intent of this specification to provide for the purchase of two Pre-Cast Concrete Open Bottom Roadway Culvert Systems to the City of Hillsboro for use in the construction of two roadway creek crossing.

In comparing bids, consideration will not be confined to price only. Delivery schedule prior to October 1, 2013 will also be a consideration in the award. The successful bidder will be the one whose product and delivery schedule is judged to best serve the interests of the City when price, product, safety, and delivery are considered. The City of Hillsboro reserves the right to reject any or all bids or any part thereof, and to waive any minor technicalities. A contract will be awarded to the responsive bidder submitting the most advantageous price and delivery schedule that meets the requirements of this specification.

### General

The specification herein states the minimum requirements of the City. All bids must be regular in every aspect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The City of Hillsboro will consider as "irregular" or "non-responsive" and reject any bid not prepared and submitted in accordance with the specifications, or any bid lacking sufficient technical literature to enable the City to make a reasonable determination of compliance to the specifications.

### **Interpretations**

In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specification documents or any part thereof. Any request for such consideration shall be made in writing to the City of Hillsboro. Based upon such inquiry, the City may choose to issue an addendum to the specifications.

## SPECIFIC SPECIFICATIONS

Proposed Pre-Cast Concrete Culvert Systems shall be as specified in the attached drawings labeled sheet R2.10, R2.12, R8.8, and R8.9 or approved equal.

# VII. PRICING FORM CITY OF HILLSBORO

Pursuant to and in accordance with the Purchaser's General Instructions, Requirements and Specifications for Bidders relating hereto the undersigned hereby offers to furnish and deliver the following in accordance with the Specifications or an approved equal culvert system for the following prices:

| Item# | Description  | Unit |  | Total Price |  |
|-------|--|------|--|-------------|--|
| 1     | Manufacture and deliver culvert to be located at Station 47+20 | LS   |  |             |  |
| 2     | Manufacture and Deliver Culvert to be located at Station 55+75 | LS   |  |             |  |
| TOTAL |  |      |  |             |  |

The anticipated time of award for this contract is August 21, 2013.

Delivery of Culvert to be located at Station 47+20 After Receipt of Order (ARO): \_\_\_\_\_\_ Calendar Days

Delivery of Culvert to be located at Station 55+75 After Receipt of Order (ARO): \_\_\_\_\_ Calendar Days

All prices shall be firm for a minimum period of 60 days from the date of the bid opening.

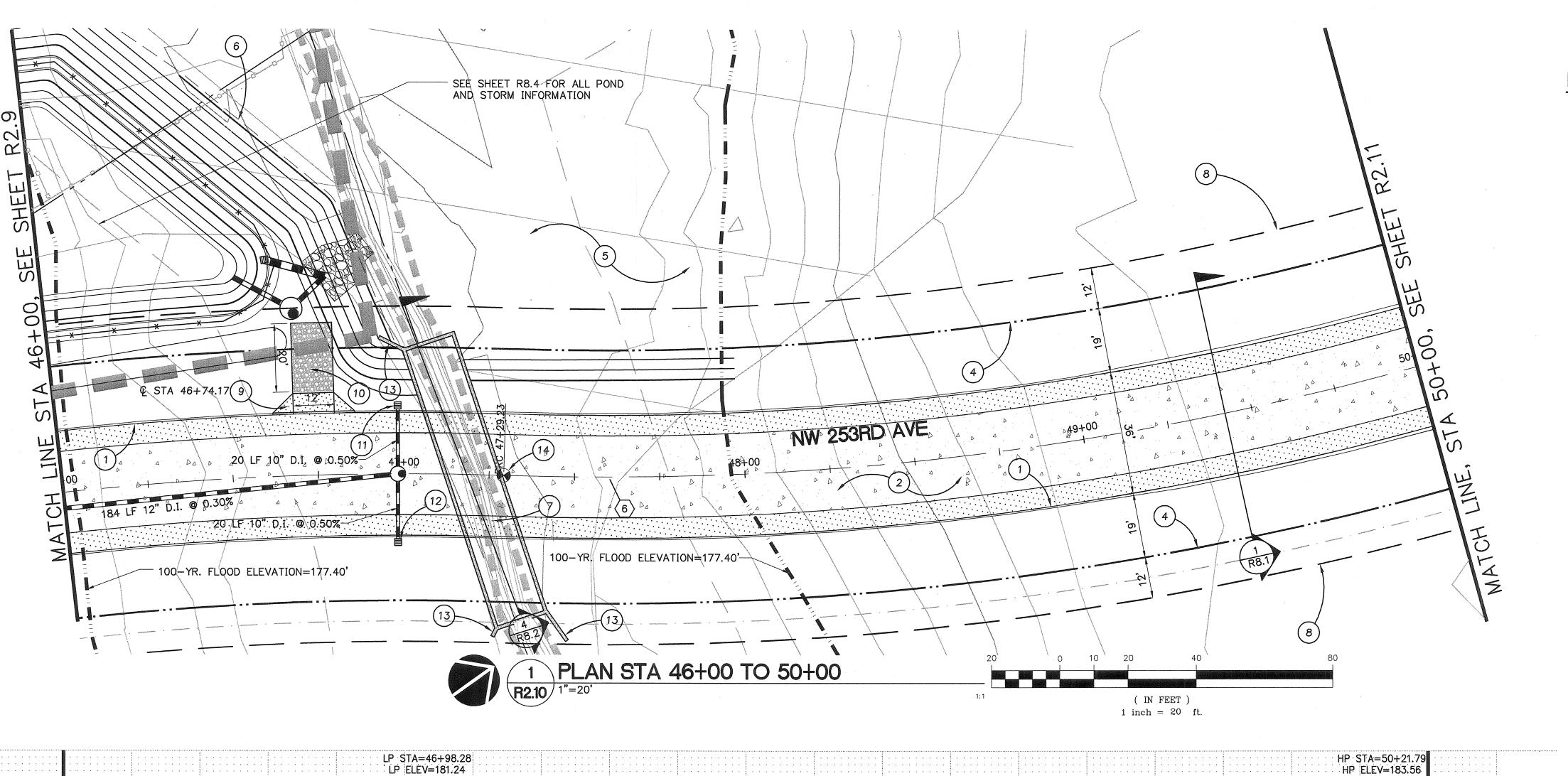
The bidder is to assume risk of loss to the culverts/spans until delivered to the purchaser

### VIII. SIGNATURE PAGE

MERGER/ACKNOWLEDGMENT: THIS BID RESPONSE, IF AWARDED BY THE CITY, WILL BECOME THE CONTRACT THAT CONSTITUTES THE ENTIRE AGREEMENT BETWEEN THE PARTIES, NO WAIVER, CONSENT, MODIFICATION OR CHANGE OF TERMS OF THIS CONTRACT SHALL BIND EITHER PARTY UNLESS IN WRITING AND SIGNED BY BOTH PARTIES. SUCH WAIVER, CONSENT, MODIFICATION OR CHANGE, IF MADE, SHALL BE EFFECTIVE ONLY IN THE SPECIFIC INSTANCE AND FOR THE SPECIFIC PURPOSE GIVEN. THERE ARE NO UNDERSTANDINGS, AGREEMENTS, OR REPRESENTATIONS, ORAL OR WRITTEN, NOT SPECIFIED HEREIN REGARDING THIS CONTRACT. CONTRACTOR'S OWN LEGAL COUNSEL HAS ADVISED THE CONTRACTOR. THE CONTRACTOR, BY SIGNATURE OF ITS AUTHORIZED REPRESENTATIVE, HEREBY ACKNOWLEDGES THAT HE/SHE ALSO HAS READ THIS CONTRACT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. THIS CONTRACT SHALL BIND THE CITY WHEN IT IS SIGNED BY AN AUTHORIZED SIGNOR FOR THE CITY OF HILLSBORO.

| I hereby ac | knowledge having received                       | and duly considered the    | e following add  | lenda to the specifications:  |                  |
|-------------|---|----------------------------|------------------|---|------------------|
|             |   | to No                      |                  |   |                  |
|             | nature below I agree to page forth in this ITB. | rovide all solicited goo   | ods in accordan  | ace with the specifications and meet                                    | t the performanc |
|             | Name of Bidder/0                                | Contractor                 |                  | Date  | -                |
| By:         |   |                            | ,                |   |                  |
|             | Authorized Signa                                | ture                       |                  | Title   |                  |
|             | Printed Name                                    |                            |                  |   |                  |
| Address     |   |                            |                  |   |                  |
| Phone:      |   | Fax:                       | Email:           |   |                  |
| Federal Tax | x Identification No                             |                            | _                |   |                  |
| Business D  | esignation of Bidder:                           |                            | _ (Corporation   | on, Partnership, Sole Proprietor, Joint                                 | t Venture)       |
| Bidder IS   | or IS NOT (circle one)                          | a resident bidder as defin | ned in ORS 279   | 9A.120.   |                  |
| additional  |   | en accepting the Procur    |                  | a authorized Procurement Card. No ja a form of payment. Please indicate |                  |
|             | ☐ Our firm will acc                             | ept the City's Credit C    | ard as payment   | ī.  |                  |
|             | ☐ Our firm is unabl                             | le to accept the City's C  | Credit Card as p | payment at this time.   |                  |
| The above   | response will not be used                       | in evaluating bids or pr   | roposals and is  | not a condition of award  |                  |
|             |   |                            |                  |   |                  |
| If          |   |                            |                  |   |                  |
| SIGNAT      | URE BELOW BY                                    | THE CITY OF                | HILLSBO          | RO CONSTITUTES ACC  | CEPTANCE         |
| ,           |   |                            | TTED BY          | THE VENDOR.   |                  |
| J           | For the City of Hills                           | SDOFO:                     |                  |   |                  |
| Ву          |   | ·                          | Date:            | , 20  |                  |
| -<br>I      | Printed Name                                    |                            | Title            | _   |                  |

THE



PROPOSED CENTERLINE

OF ROADWAY

PRECAST ARCH CULVERT

BEBO E12 OR EQUIVALENT

15'-0" SPAN WITH 3'-234" RISE

TOP OF CULVERT=176.25

\[ \int \text{SEE DETAIL SHEET R8.8} \]

ORDINARY HIGH WATER LEVEL=174.45

STA 47+21.60

PVI STA=47+06.63

PVI ELEV=180.32

K=121.91

VC=300.00'

47+00

184 LF 12" D.I. @ 0.30%

FUTURE 24" WATER LINE-

186

184

182

180

178

176

174

172

170

46+00

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: CITY OF HILLSBORO DATE: 1/9/2013

**KEYNOTES** 

PVI STA=49+89.99

PVI ELEV=184.00

K=101.46

VC=200.00'

184

182

180

178

176

- . PROPOSED MOUNTABLE CURB, SEE DETAIL 8/R8.7. TRANSITION TO VERTICAL CURB AT CATCH BASIN LOCATIONS, SEE DETAILS 9/R8.9 AND 2/R8.5.
- 2. PROPOSED CONCRETE ROADWAY, SEE DETAIL 1/R8.1 AND 3/R8.7
- 3. PROTECT EXISTING DITCH CHANNEL TO REMAIN
- 4. PROPOSED R.O.W.
- 5. DENSE WOODED AREA, REFER TO SHEET R1.5 FOR TREE REMOVAL PLAN
- 6. SLOPE EASEMENT, EXTEND 1' BEYOND DISTURBED AREA
- 7. S. FORK WAIBLE CREEK CULVERT CROSSING INSTALL PRECAST ARCH CULVERT NATURAL CHANNEL BOTTOM STA 47+21.60
  BEBO E12 OR EQUIVALENT
  15'-0" SPAN WITH 3'-2¾" RISE
  SEE SHEET R8.8 AND R8.9
- 8. PUBLIC UTILITY EASEMENT
- 9. INSTALL 12' WIDE AC DRIVEWAY APPROACH. SEE DETAIL 7/R8.7.
- 10. INSTALL 12' WIDE GRAVEL ACCESS ROAD, SEE DETAIL 4/R8.7
- 11. CONSTRUCT CG-2 CATCH BASIN WITH CURB BREAK INLET SEE DETAIL 2/R8.5 STA 46+98 (20' LT) RIM ELEV=181.41 IE OUT=179.05(E)
- 12. CONSTRUCT CG-2 CATCH BASIN WITH CURB BREAK INLET SEE DETAIL 2/R8.5 STA 46+98 (20' RT) RIM ELEV=181.40 IE IN=179.17(E) IE OUT=179.05(W)
- 13. INSTALL CULVERT HEADWALL, SEE CULVERT DETAILS ON SHEET R8.8 AND R8.9
- 14. INSTALL SURVEY MONUMENT AND CASE PER DETAIL 4/R8.10

**5** 

CITY OF HILLSBORO

Project NW 253RD AVE **IMPROVEMENTS AND EXTENSION** 



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**REVISIONS:** 

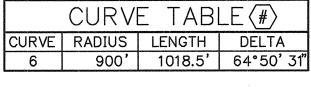
REVISIONS REVISION DELTA

WITHOUT PRIOR WRITTEN PERMISSION

SHEET TITLE: PLAN AND PROFILE SHEET STA 46+00 TO

STA 50+00

JOB NO. 2120550.00

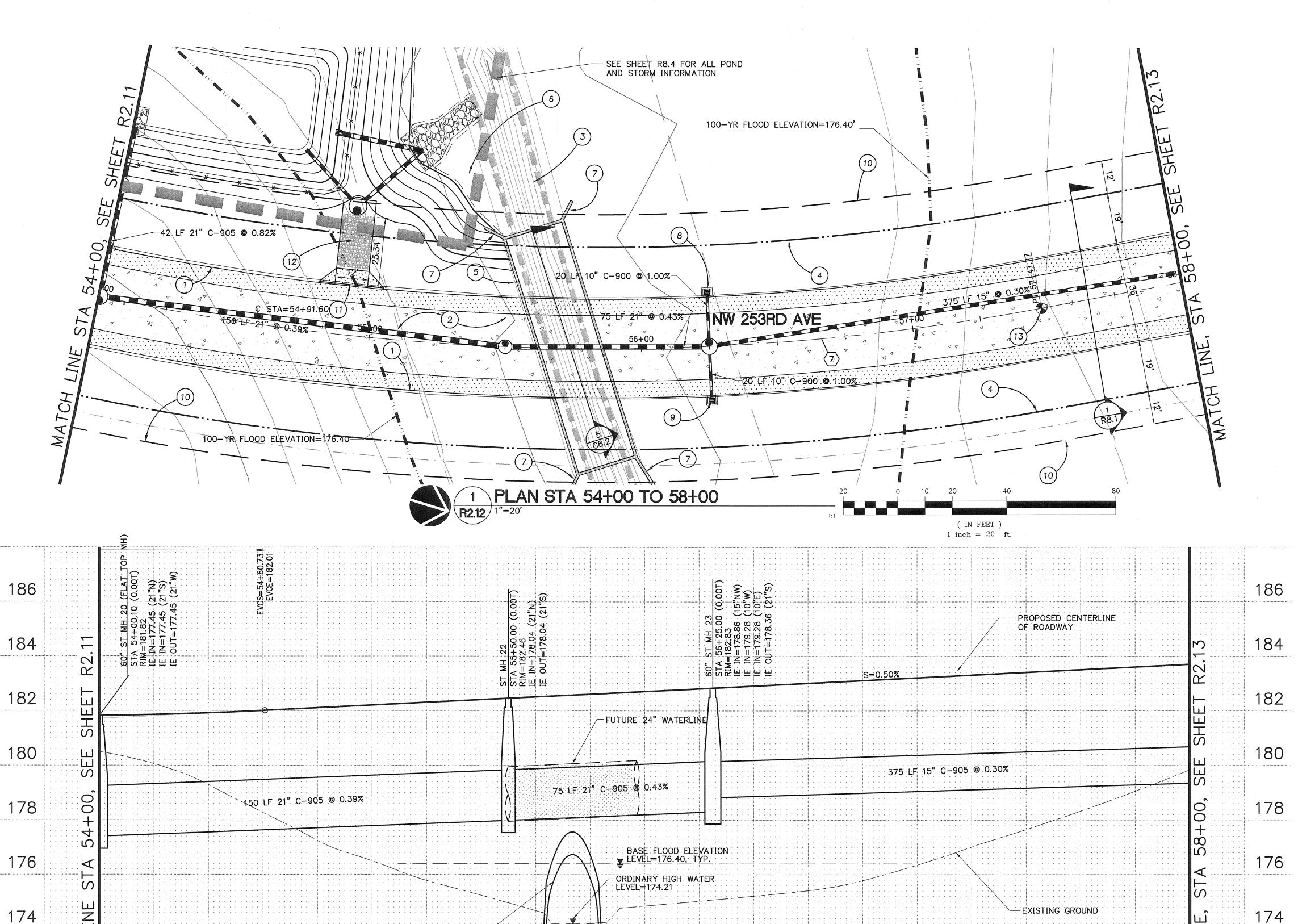


100% CITY SUBMITTAL 6/26/13

DRAWN BY: CHECKED BY: RJH SHEET: R2.10

174 MATCH FOOTINGS TO BE DESIGNED BY CONTECH, SEE DETAIL R8.8.
NO CONSTRUCTION ACTIVITY ALLOWED WITHIN ORDINARY
HIGH WATER LINE 172 170 50+00 48+00 49+00 PROFILE STA 46+00 TO 50+00 1"=20' HORIZONTAL 1"=2' VERTICAL

-EXISTING GROUND



FOOTINGS TO BE DESIGNED BY CONTECH,

WITHIN ORDINARY HIGH WATER LINE

56+00

PROFILE STA 54+00 TO 58+00

R2.12 1"=20' HORIZONTAL 1"=2' VERTICAL

SEE SHEET R8.8. NO CONSTRUCTION ACTIVITY ALLOWED:

57+00

CONTECH BEBO E16 OR EQUIVALENT 22'-0" SPAN WITH 5'-34" RISE TOP OF CULVERT=177.57 SEE SHEET R8.8

STA 55+74

55+00

170

168

54+00

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: CITY OF HILLSBORO DATE: 1/9/2013

# **KEYNOTES**



- PROPOSED MOUNTABLE CURB, SEE DETAIL 8/R8.7. TRANSITION TO VERTICAL CURB AT CATCH BASIN LOCATIONS, SEE DETAILS 9/R8.7 AND 2/R8.5. 2. PROPOSED CONCRETE ROADWAY, SEE DETAIL 1/R8.1 AND 3/R8.7
- 3. DO NOT DISTURB EXISTING WAIBLE CREEK CHANNEL BEYOND LIMITS OF WORK
- 4. PROPOSED R.O.W.
- 5. WAIBLE CREEK CULVERT CROSSING INSTALL PRECAST ARCH CULVERT NATURAL CHANNEL BOTTOM STA 55+74 CONTECH BEBO E16 OR EQUIVALENT 22'-0" SPAN WITH 5'-34" RISE SEE SHEETS R8.8 AND R8.9
- 6. SLOPE EASEMENT 1' BEYOND TOE OF SLOPE
- 7. INSTALL CONCRETE HEADWALL, SEE CULVERT DETAILS ON SHEET R8.8 AND R8.9
- 8. CONSTRUCT CG-2 CATCH BASIN WITH CURB BREAK INLET SEE DETAIL 2/R8.5 STA 56+25 (20' LT) RIM ELEV=181.51 IE OUT=179.48(W)
- 9. CONSTRUCT CG-2 CATCH BASIN WITH CURB BREAK INLET SEE DETAIL 2/R8.5 STA 56+25 (20' RT) RIM ELEV=182.21 IE OUT=179.48(W)
- 10. PUBLIC UTILITY EASEMENT

MATCH

58+00

172

170

168

- 11. INSTALL 12' WIDE AC DRIVEWAY APPROACH. SEE DETAIL 7/R8.7.
- 12. INSTALL 12' WIDE GRAVEL ACCESS ROAD. SEE DETAIL 4/R8.7
- 13. INSTALL SURVEY MONUMENT AND CASE PER DETAIL 4/R8.10

CURVE TABLE (#)

CURVE RADIUS LENGTH DELTA

7 900' 1018.53' 64°50' 31"

CITY OF HILLSBORO

U

Project NW 253RD AVE IMPROVEMENTS AND EXTENSION

EXPIRES: 6/30/13

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**REVISIONS:** 

OST THIS CLOSING DATE

SHEET

SHEET TITLE: PLAN AND PROFILE SHEET STA 54+00 TO STA 58+00

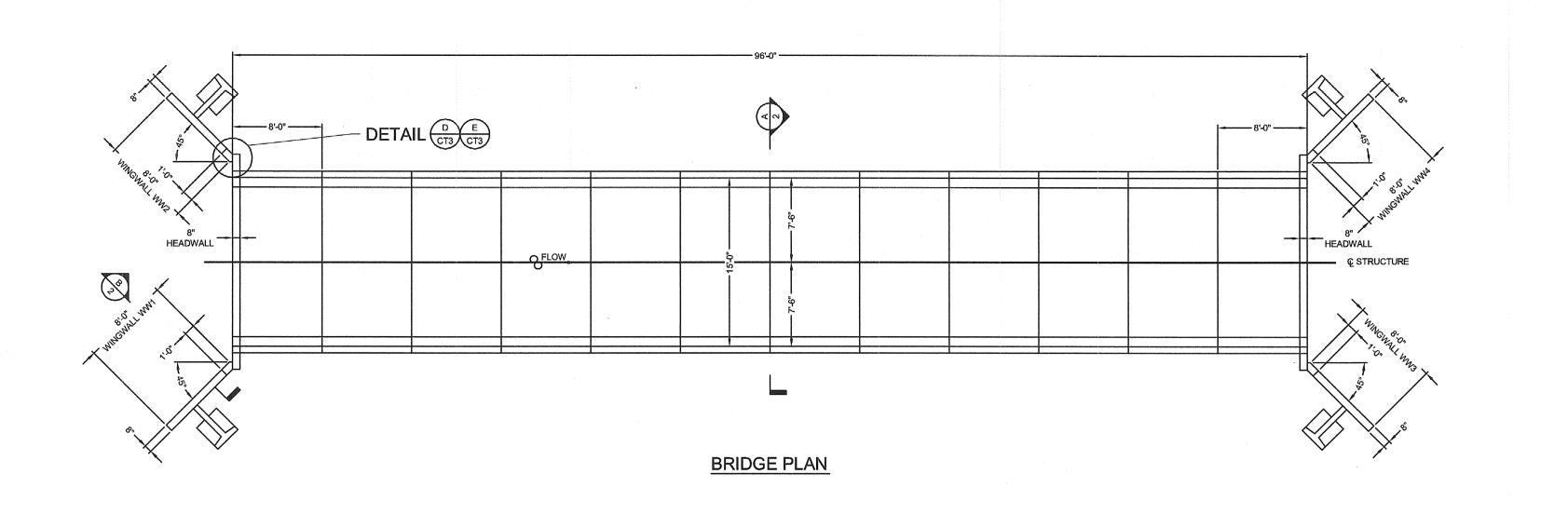
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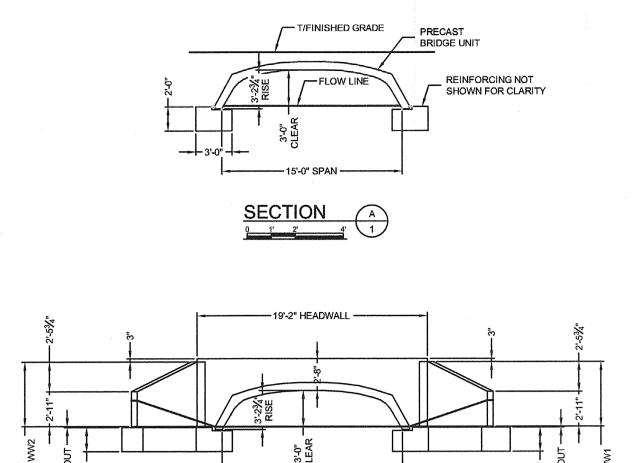
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CHECKED BY: RJH

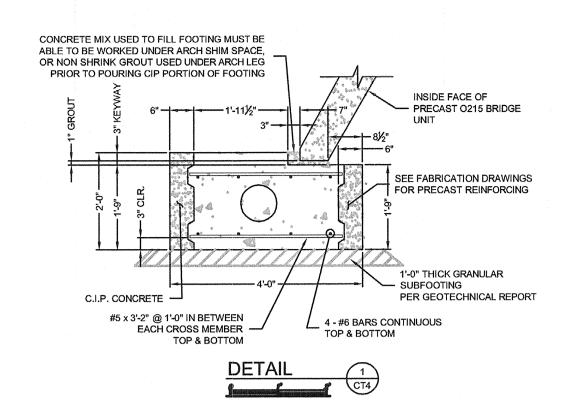
R2.12

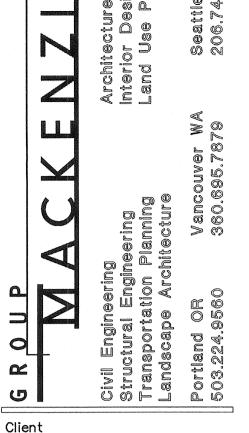
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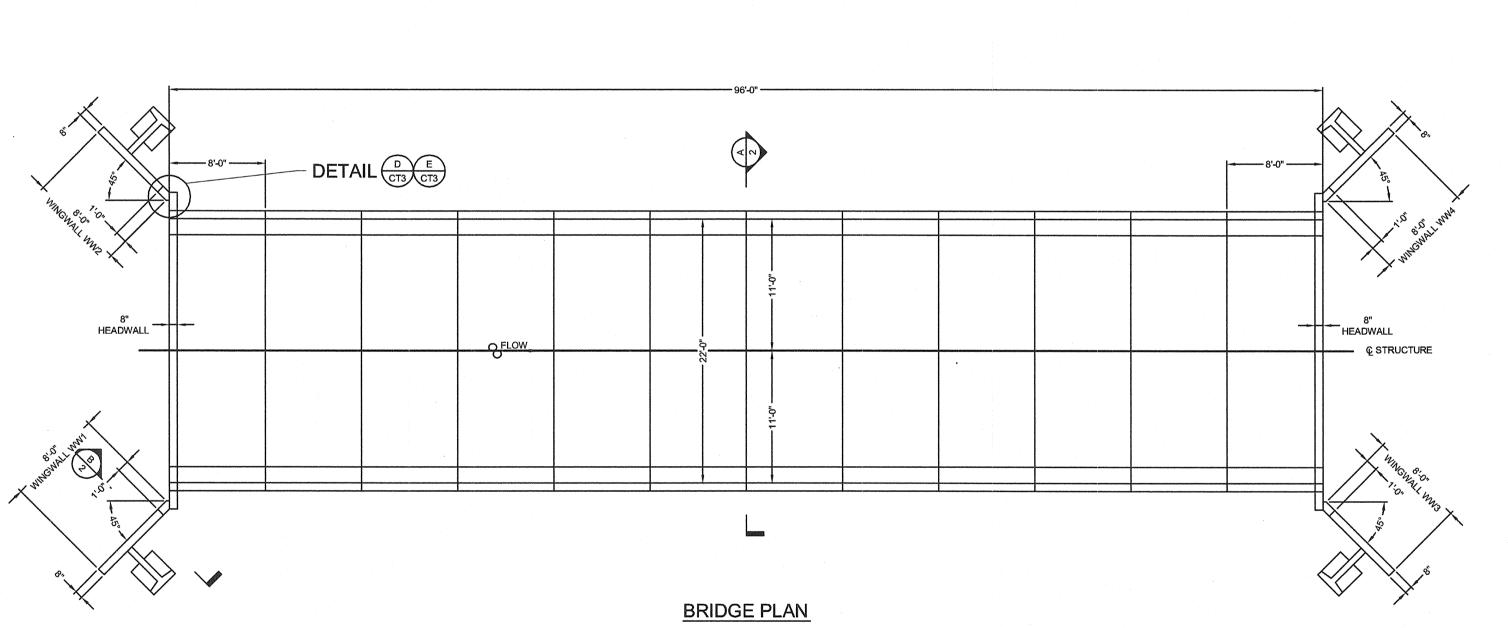
TYPICAL END ELEVATION

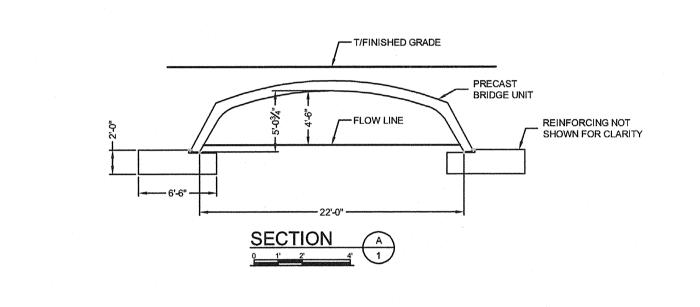


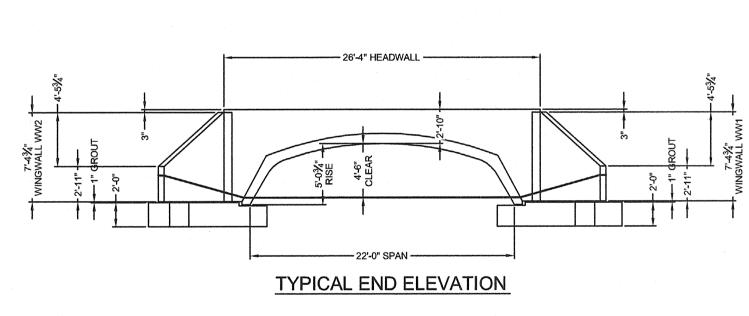


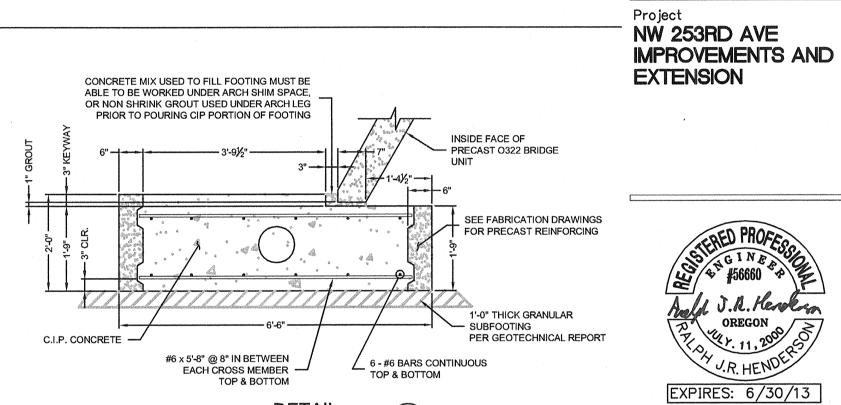
Client
CITY OF HILLSBORO

1 ARCH CULVERT - STA 47+20 R8.8 SCALE: 1/8" = 1'-0"









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**REVISIONS:**  REVISIONS REVISION DELTA CLOSING DATE

SHEET TITLE: **PRECAST** ARCH CULVERT **DETAILS** 

DRAWN BY:

CHECKED BY:

SHEET:

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JOB NO. **2120550.00** 

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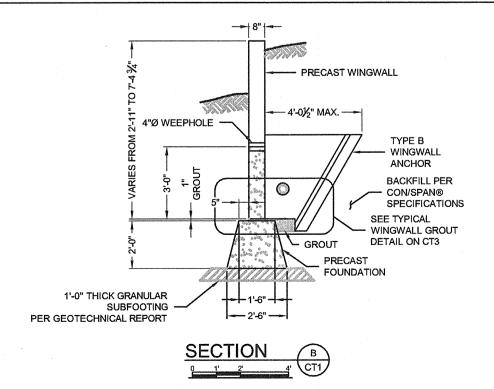
2 ARCH CULVERT - STA 55+75 R8.8 SCALE: 1/8" = 1'-0"

# **DESIGN DATA**

DESIGN LOADING: BRIDGE UNITS: HS-20 DESIGN FILL HEIGHT: 2'-0" MIN. TO 4'-6" MAX. FROM TOP OF CROWN TO TOP OF PAVEMENT. DESIGN METHOD: LOAD RESISTANCE FACTORED DESIGN NET ALLOWABLE SOIL BEARING PRESSURE: 2500 PSF \* GROSS ALLOWABLE SOIL BEARING PRESSURE: 2980 PSF

\*FOUNDATION EXCAVATION AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT FOR THIS PROJECT PREPARED BY GEO DESIGN, INC DATED 2/25/13.

MATERIALS
PRECAST UNITS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH CON/SPAN® SPECIFICATIONS. CONCRETE FOR FOOTINGS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING STEEL FOR FOOTINGS SHALL CONFORM TO ASTM A615 OR A996-GRADE 60.



3 TYPICAL WINGWALL DETAILS **R8.8** SCALE: 1/8" = 1'-0"

DESCRIPTION
1.1. TYPE - THIS WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A CON/SPAN® BRIDGE SYSTEM II CCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINE GRADES, DESIGN AND DIMENSIONS SHOWN ON THE PLANS OR AS ESTABLISHED BY THE ENGINEER. IN SITUATIONS WHERE TWO OR MORE SPECIFICATIONS APPLY TO THIS WORK, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.

1.2. DESIGNATION - PRECAST REINFORCED CONCRETE CONISPAN® BRIDGE UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY SPAN AND RISE. PRECAST REINFORCED CONCRETE WINGWALLS AND HEADWALLS

SPECIFICATION SHALL BE DESIGNATED BY LENGTH,

HEIGHT, AND DEFLECTION ANGLE.

2.1. SPECIFICATIONS - THE PRECAST ELEMENTS ARE DESIGNED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" 17TH EDITION ADOPTED BY THE AMERICAN ASSOCIATION OF STAT MINIMUM OF ONE FOOT OF COVER ABOVE THE CROWN OF THE BRIDGE UNITS IS REQUIRED IN THE INSTALLED CONDITION. (UNLESS NOTED OTHERWISE ON THE SHOP DRAWINGS AND DESIGNED ACCORDINGLY.)

. MATERIALS
3.1. CONCRETE - THE CONCRETE FOR THE PRECAST ELEMENTS SHALL BE AIR-ENTRAINED WHEN INSTALLED IN AREAS SUBJECT TO FREEZE-THAW CONDITIONS, COMPOSED OF PORTLAND CEMENT, FINE AND COARSE AGGREGATES, ADMIXTURES AND WATER. AIR-ENTRAINE CONCRETE SHALL CONTAIN 6 ± 2 PERCENT AIR. THE AIR INTRAINING ADMIXTURE SHALL CONFORM TO AASHTO M154. THE MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE AS SHOWN ON THE SHOP

3.1.1.PORTLAND CEMENT - SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATIONS C150-TYPE I, TYPE II, OR TYPE III CEMENT. 3.1.2. COARSE AGGREGATE - SHALL CONSIST OF STONI HAVING A MAXIMUM SIZE OF 1 INCH. AGGREGATE SHALL MEET REQUIREMENTS FOR ASTM C33.
3.1.3. WATER REDUCING ADMIXTURE - THE
MANUFACTURER MAY SUBMIT, FOR APPROVAL BY THE ENGINEER. A WATER-REDUCING ADMIXTURE FOR THE PURPOSE OF INCREASING WORKABILIT AND REDUCING THE WATER REQUIREMENT FOR THE CONCRETE. 3.1.4. CALCIUM CHLORIDE - THE ADDITION TO THE MIX OF

CONTAINING CALCIUM CHLORIDE WILL NOT BE 3.1.5.MIXTURE - THE AGGREGATES, CEMENT AND WATER SHALL BE PROPORTIONED AND MIXED IN A BATCH MIXER TO PRODUCE A HOMOGENEOUS CONCRETE MEETING THE STRENGTH REQUIREMENTS OF THIS SPECIFICATION. THE PROPORTION OF PORTLAND CEMENT IN THE MIXTURE SHALL NOT BE LESS THAN 564 POUNDS (6 SACKS) PER CUBIC YARD OF

CALCIUM CHLORIDE OR ADMIXTURES

3.2 STEEL REINFORCEMENT 3.2.1. THE MINIMUM STEEL YIELD STRENGTH SHALL BE 60,000 PSI, UNLESS OTHERWISE NOTED ON TH SHOP DRAWINGS. 3.2.2. ALL REINFORCING STEEL FOR THE PRECAST ELEMENTS SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE DETAILED SHOP DRAWINGS SUBMITTED BY THE MANUFACTURER.

3.2.3. REINFORCEMENT SHALL CONSIST OF WELDED WIRE FABRIC CONFORMING TO ASTM SPECIFICATION A 185 OR A 497, OR DEFORMED BILLET STEEL BARS CONFORMING TO ASTM SPECIFICATION A 615 GRADE 60. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY CONSIST OF WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS.

3.3. STEEL HARDWARE
3.3.1.BOLTS AND THREADED RODS FOR WINGWAL CONNECTIONS SHALL CONFORM TO ASTM A 301 NUTS SHALL CONFORM TO AASHTO M292 (ASTM A194) GRADE 2H. ALL BOLTS, THREADED RODS AND NUTS USED IN WINGWALL CONNECTIONS SHALL BE MECHANICALLY ZINC COATED IN ACCORDANCE WITH ASTM B695 CLASS 50. 3.3.2. STRUCTURAL STEEL FOR WINGWALL CONNECTION PLATES AND PLATE WASHERS SHALL CONFORM T BE HOT DIP GALVANIZED AS PER AASHTO M111 3.3.3.INSERTS FOR WINGWALLS SHALL BE 1" DIAMETER

12. <u>INSTALLATION PREPARATION</u>
TO ENSURE CORRECT INSTALLATION OF THE PRECAST CONCRETE BRIDGE SYSTEM, CARE AND CAUTION MUST BE EXERCISED IN FORMING THE SUPPORT AREAS FOR BRIDGE UNITS, HEADWALL AND WINGWALL ELEMENTS. EXERCISING SPECIAL CARE WILL FACILITATE THE RAPID INSTALLATION OF THE PRECAST COMPONENTS.

12.1. FOOTINGS
DO NOT OVER EXCAVATE FOUNDATIONS UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.

THE SITE SOILS ENGINEER SHALL CERTIFY THAT THE BEARING CAPACITY MEETS OR EXCEEDS THE FOOTING DESIGN REQUIREMENTS, PRIOR TO THE CONTRACTOR POURING OF THE FOOTINGS.

INSTALLED ON EITHER PRECAST OR CAST-IN-PLACE CONCRETE FOOTINGS. THE SIZE AND ELEVATION OF THE FOOTINGS SHALL BE AS DESIGNED BY THE ENGINEER. A KEYWAY SHALL BE FORMED IN THE TOP SURFACE OF THE BRIDGE FOOTING AS SPECIFIED ON THE PLANS. NO KEYWAY IS REQUIRED IN THE WINGWALL FOOTINGS, UNLESS OTHERWISE SPECIFIED ON

THE FOOTINGS SHALL BE GIVEN A SMOOTH FLOAT FINISH AND SHALL REACH A COMPRESSIVE STRENGTH OF 2 000 PSI REFORM PLACEMENT OF THE BRIDGE AND WINGWALL ELEMENTS. BACKFILLING SHALL NOT BEGIN UNTIL THE FOOTING HAS REACHED THE FULL DESIGN COMPRESSIVE STRENGTH.

THE FOOTING SURFACE SHALL BE CONSTRUCTED IN ACCORDANCE WITH GRADES SHOWN ON THE PLANS. WHEN TESTED WITH A 10'-0" STRAIGHT EDGE. THE SURFACE SHALL NOT VARY MORE THAN 1/2" IN 10'-0". IF A PRECAST CONCRETE FOOTING IS USED, THE

CONTRACTOR SHALL PREPARE A 4" THICK BASE LAYER OF COMPACTED GRANULAR MATERIAL THE FULL WIDTH OF THE FOOTING PRIOR TO PLACING THE PRECAST FOOTING. THE FOUNDATIONS FOR PRECAST CONCRETE

BRIDGE ELEMENTS AND WINGWALLS MUST BE

CONNECTED BY REINFORCEMENT TO FORM ONE MONOLITHIC BODY, EXPANSION JOINTS SHALL THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF THE FOUNDATIONS PER

THE PLANS AND SPECIFICATIONS.

13. INSTALLATION13.1. GENERAL - THE INSTALLATION OF THE PRECAST CONCRETE ELEMENTS SHALL BE AS EXPLAINED IN THE PUBLICATION CON/SPAN BRIDGE SYSTEMS INSTALLATION HANDROOK.

CONTRACTOR TO ENSURE THAT A CRANE OF THE CORRECT LIFTING CAPACITY IS AVAILABLE TO HANDLE THE PRECAST CONCRETE UNITS THIS CAN BE ACCOMPLISHED BY USING THE WEIGHTS GIVEN FOR THE PRECAST CONCRETE COMPONENTS AND BY DETERMINING THE LIFTING REACH FOR EACH CRANE UNIT, SITE CONDITIONS MUST BE CHECKED WELL IN ADVANCE OF SHIPPING TO ENSURE PROPER CRANE LOCATION AND TO AVOID ANY LIFTING RESTRICTIONS. THE LIFT ANCHORS OR HOLES PROVIDED IN EACH UNIT ARE THE ONLY MEANS TO BE USED TO LIFT THE ELEMENTS. THE PRECAST CONCRETE ELEMENTS MUST NOT BE

13.1.2. CONSTRUCTION EQUIPMENT WEIGHT RESTRICTIONS - IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HS20 OR HS25) BE PERMITTED OVER THE BRIDGE UNITS UNLESS APPROVED BY CONTECH® BRIDGE SOLUTIONS.

UNITS, THE FOLLOWING RESTRICTIONS MACHINERY DURING BACKFILLING OPERATIONS APPLY

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® BRIDGE SYSTEMS MANUFACTURED BY DAYTON/RICHMOND CONCRETI ACCESSORIES, MIAMISBURG, OHIO, (800) 745-370

3.3.4. FERRULE LOOP INSERTS SHALL BE F-64 FERRULE LOOP INSERTS AS MANUFACTURED BY AYTON/RICHMOND CONCRETE ACCESSORIES 3.3.5. HOOK BOLTS USED IN ATTACHED HEADWALL CONNECTIONS SHALL BE ASTM A307. 3.3.6.INSERTS FOR DETACHED HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL, F-58 EXPANDED COIL INSERTS AS MANUFACTURED BY DAYTON/RICHMOND CONCRETE ACCESSORIES, MAMISBURG, OHIO. (800) 745-3700, COIL RODS AND NUTS USED IN HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL. WASHERS USED IN HEADWALL CONNECTIONS

SHALL BE EITHER AISI TYPE 304 STAINLESS STEE PLATE WASHERS OR AASHTO M270 (ASTM A709) GRADE 36 PLATE WASHERS HOT DIP GALVANIZED AS PER AASHTO M111 (ASTM A123). 3.3.7. REINFORCING BAR SPLICES SHALL BE MADE USING THE DOWEL BAR SPLICER SYSTEM AS MANUFACTURED BY DAYTON/RICHMOND CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700, AND SHALL CONSIST OF THE DOWEL BAR SPLICER (DB-SAE) AND DOWEL-IN (DI).

4. MANUFACTURE OF PRECAST ELEMENTS - SUBJECT TO THE PROVISIONS OF SECTION 5, BELOW, THE PRECAST ELEMENT DIMENSION AND REINFORCEMENT DETAILS SHALL BE AS PRESCRIBED IN THE PLAN AND SHOP DRAWINGS PROVIDED THE MANUFACTURER.
. FORMS - THE FORMS USED IN MANUFACTURE SHALL BE SUFFICIENTLY RIGID AND ACCURATE TO MAINTAIN THE EQUIRED PRECAST ELEMENT DIMENSIONS WITHIN THI PERMISSIBLE VARIATIONS GIVEN IN SECTION 5 OF THES SPECIFICATIONS. ALL CASTING SURFACES SHALL BE OF A SMOOTH MATERIAL. PLACEMENT OF REINFORCEMENT

4.2.1.PLACEMENT OF REINFORCEMENT IN PRECAST BRIDGE UNITS - THE COVER OF CONCRETE OVER THE OUTSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 2" MINIMUM. THE COVER OF CONCRETE REINFORCEMENT SHALL BE 1½" MINIMUM, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS. THE CLEAR DISTANCE OF THE END CIRCUMFERENTIA WIRES SHALL NOT BE LESS THAN 1" NOR MORE HAN 2" FROM THE ENDS OF EACH SECTION REINFORCEMENT SHALL BE ASSEMBLED UTILIZING SINGLE OR MULTIPLE LAYERS OF WELDED WIRE ABRIC (NOT TO EXCEED 3 LAYERS) SUPPLEMENTED WITH A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS, WHEN NECESSARY WELDED WIRE FABRIC SHALL BE COMPOSED OF CIRCUMFERENTIAL AND LONGITUDINAL WIRES
MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE BRIDGE UNIT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT, LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING

EQUIREMENTS OF 4.3, BELOW. THE ENDS OF THE ONGITUDINAL DISTRIBUTION REINFORCEMENT SHALL BE NOT MORE THAN 3" AND NOT LESS THAN 1½" FROM THE ENDS OF THE BRIDGE UNIT. 4.2.2.BENDING OF REINFORCEMENT FOR PRECAST BRIDGE UNITS - THE OUTSIDE AND INSIDE CORNERS OF THE BRIDGE SHALL BE BENT TO SUCH CONFIGURATION OF THE BRIDGE'S OUTSIDE 4.2.3.PLACEMENT OF REINFORCEMENT FOR PRECAST WINGWALLS AND HEADWALLS - THE COVER OF CONCRETE OVER THE LONGITUDINAL AND TRANSVERSE REINFORCEMENT SHALL BE 2" MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 11/2" NOR MORE THAN 3". REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED

WIRE FABRIC, OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR

THE BARE PRECAST CONCRETE BRIDGE UNI

REACHED A MINIMUM OF 4" OVER THE CROWN

OF THE BRIDGE, CONSTRUCTION EQUIPMENT

WITH A WEIGHT OF LESS THAN 10 TONS MAY

OF THE BRIDGE, CONSTRUCTION EQUIPMENT

WITH A WEIGHT OF LESS THAN 30 TONS MAY

AFTER THE COMPACTED FILL LEVEL HAS

REACHED A MINIMUM OF 1'-0" OVER THE CROWN

REACHED THE DESIGN COVER, OR 2'-0" MINIMUM

OVER THE CROWN OF THE PRECAST CONCRETE

AFTER THE COMPACTED FILL LEVEL HAS

CROSS THE BRIDGE.

CROSS THE BRIDGE.

AFTER THE COMPACTED FILL LEVEL HAS

ENGINEER. PRECAST CONCRETE ELEMENTS MAY BE UNLOADED AND PLACED ON THE GROUND AT THE AND HEIGHT OF THE WALL SHALL NOT VARY FROM SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® BRIDGE SYSTEMS (CONT'D) COVERED CONTINUOUSLY FROM THE BOTTOM OF ONE BRIDGE SECTION LEG, ACROSS THE TOP OF THE BRIDGE AND TO THE OPPOSITE BRIDGE SECTION LEG. ANY LAPS THAT RESULT IN THI IOINT WRAP SHALL BE A MINIMUM OF 6" LONG WITH THE OVERLAP RUNNING DOWNHILL. 13.6.2. IN ADDITION TO THE JOINTS BETWEEN BRIDGE UNITS, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE HEADWALL SHALL ALSO BE SEALED AS DESCRIBED ABOVE, IF PRECAST

> COVERED WITH A 9" x 9" SQUARE OF JOINT 13.6.3. DURING THE BACKFILLING OPERATION,

13.6.4. SUBSOIL DRAINAGE SHALL BE AS DIRECTED BY THE ENGINEER.

> WHEN TEMPERATURES ARE EXPECTED TO GO BELOW 35° FOR A PERIOD OF 72 HOURS. FILL THE BRIDGE-FOUNDATION KEYWAY WITH CEMENT GROUT (PORTLAND CEMENT AND WATER OR CEMENT MORTAR COMPOSED OF PORTLAND CEMENT, SAND AND WATER) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI, VIBRATE AS REQUIRED TO ENSURE THAT THE ENTIRE KEY AROUND THE BRIDGE ELEMENT IS COMPLETELY FILLED. IF BRIDGE ELEMENTS HAVE BEEN SET WITH TEMPORARY TIES (CABLES, BARS, ETC.) GROUT MUST ATTAIN

PSI BEFORE TIES MAY BE REMOVED. 2. ALL GROUT SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1/4".

BACKFILL

1. DO NOT PERFORM BACKFILLING DURING WET OR FREEZING WEATHER. 13.8.2. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER

SPECIFICATIONS FOR EXCAVATION FOR STRUCTURES AND ROADWAY EXCAVATION AND EMBANKMENT CONSTRUCTION, SHALL APPLY

ZONE A: CONSTRUCTED EMBANKMENT OR ZONE B: FILL THAT IS DIRECTLY ASSOCIATED WITH PRECAST CONCRETE BRIDGE NSTALLATION. ZONE C: ROAD STRUCTURE.

> SUFFICIENTLY STABLE TO ALLOW EFFECTIVE SUPPORT TO THE PRECAST CONCRETE BRIDGE UNITS. AS A GUIDE THE EXISTING NATURAL GROUND SHOULD BE OF SIMILAR QUALITY AND DENSITY TO ZONE B MATERIAL FOR MINIMUM LATERAL DIMENSION OF ONE BRIDGE SPAN OUTSIDE OF THE BRIDGE FOOTING WITH SPECIFICATIONS AND COMPACTING PROCEDURES EQUAL TO THAT FOR NORMAL ROAD EMBANKMENTS.

OF ACCEPTABLE SOILS. 13.8.5.4. ZONE C - ZONE C IS THE ROAD SECTION OF GRAVEL, ASPHALT OR CONCRETE BUILT IN COMPLIANCE WITH LOCAL ENGINEERING PRACTICES. GRADATIONS OF ALL INTERFACING

THAN 1½".

5.2.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING, STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION. 6.1.1. TYPE OF TEST SPECIMEN - CONCRETE COMPRESSIVE STRENGTH SHALL BE DETERMINED FROM COMPRESSION TESTS MADE ON CYLINDER OR CORES, FOR CYLINDER TESTING, A MINIMUM OF OR CORES, FOR CTEINDER TESTING, A MINIMOW O 4 CYLINDERS SHALL BE TAKEN FOR EACH BRIDGE ELEMENT. EACH ELEMENT SHALL BE CONSIDERED REJECTION
THE PRECAST ELEMENTS SHALL BE SUBJECT TO REJECTION

REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS

THAT SHOWN IN THE DESIGN BY MORE THAN ½"
5.2.3, POSITION OF REINFORCEMENT - THE MAXIMUM

VARIATION IN THE POSITION OF THE

SEPARATELY FOR THE PURPOSE OF TESTING AND ACCEPTANCE. 6.1.2. COMPRESSION TESTING - CYLINDERS SHALL BE MADE AND TESTED AS PRESCRIBED BY THE ASTM C39 SPECIFICATION. CYLINDERS SHALL BE CURED IN THE SAME ENVIRONMENT AS THE BRIDGE ELEMENTS, CORES SHALL BE OBTAINED AND TESTED FOR COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE PROVISIONS OF THE ASTM C42 SPECIFICATION. AZESTECIFICATION.

ACCEPTABILITY OF CYLINDER TESTS - WHEN THE

AVERAGE COMPRESSIVE STRENGTH OF ALL

CYLINDERS TESTED IS EQUAL TO OR GREATER

THAN THE DESIGN COMPRESSIVE STRENGTH, AND NOT MORE THAN 10% OF THE CYLINDERS TESTED HAVE A COMPRESSIVE STRENGTH LESS THAN THE DESIGN CONCRETE STRENGTH, AND NO CYLINDER ESTED HAS A COMPRESSIVE STRENGTH LESS THAN 80% OF THE DESIGN COMPRESSIVE STRENGTH, THEN THE ELEMENT SHALL BE ACCEPTED. WHEN THE COMPRESSIVE STRENGTH F THE CYLINDERS TESTED DOES NOT CONFOR TO THESE ACCEPTANCE CRITERIA, THE ACCEPTABILITY OF THE ELEMENT MAY BE DETERMINED AS DESCRIBED IN SECTION 6.1.4 6.1.4. ACCEPTABILITY OF CORE TESTS - THE

COMPRESSIVE STRENGTH OF THE CONCRETE IN A BRIDGE ELEMENT IS ACCEPTABLE WHEN THE AVERAGE CORE TEST STRENGTH IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH WHEN THE COMPRESSIVE STRENGTH OF A CORI TESTED IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST FLEMENT FROM WHICH HAT CORE WAS TAKEN MAY BE RE-CORED. WHEN HE COMPRESSIVE STRENGTH OF THE RE-CORE IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH, THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THAT BRIDGE ELEMENT IS ACCEPTABLE. 6.1.4.1. WHEN THE COMPRESSIVE STRENGTH OF ANY RECORE IS LESS THAN THE DESIGN

CONCRETE STRENGTH THE PRECAST ELEMENT FROM WHICH THAT CORE WAS AKEN SHALL BE REJECTED 6.1.4.2. PLUGGING CORE HOLES - THE CORE HOLES SHALL BE PLUGGED AND SEALED BY THE IANUFACTURER IN A MANNER SUCH TH THE ELEMENTS WILL MEET ALL OF THE TEST REQUIREMENTS OF THIS SPECIFICATION. PRECAST ELEMENTS SO SFALED SHALL BE CONSIDERED SATISFACTORY FOR USE.
6.1.4.3. TEST EQUIPMENT - EVERY MANUFACTURER FURNISHING PRECAST ELEMENTS UNDER HIS SPECIFICATION SHALL FURNISH AL FACILITIES AND PERSONNEL NECESSAR CARRY OUT THE TEST REQUIRED INSPECTION - THE QUALITY OF MATERIALS, THE PROCESS

ELEMENTS SHALL BE SUBJECT TO INSPECTION BY THE JOINTS
THE BRIDGE UNITS SHALL BE PRODUCED WITH FLAT BUTT ENDS. THE ENDS OF THE BRIDGE UNITS SHALL BE SUCH THAT WHEN THE SECTIONS ARE LAID TOGETHER THEY WIL OF APPRECIABLE IRREGULARITIES, ALL COMPATIBLE WITH THE PERMISSIBLE VARIATIONS IN SECTION 5. ABOVE, TH

OF MANUFACTURE, AND THE FINISHED PRECAS

PLACING AND COMPACTING BACKFILL

NOT EXCEED 3/4".

AT THE SAME TIME AS THAT OF THE BRIDGE FILL. IT MUST BE PLACED IN PROGRESSIVELY PLACED HORIZONTAL LAYERS NOT EXCEEDING 8" PER

THE BACKFILL OF ZONE B SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% OF THE T-99.

SOIL WITHIN 1'-0" OF CONCRETE SURFACES SHOULD BE HAND-COMPACTED. ELSEWHERE USE OF ROLLERS IS ACCEPTABLE. IF VIBRATING ROLLER-COMPACTORS ARE USED. THEY SHOULD NOT BE STARTED OR STOPPED WITHIN ZONE B AND THE VIBRATION FREQUENCY SHOULD BE AT LEAST 30 REVOLUTIONS PER SECOND. THE BACKFILL MATERIAL AND COMPACTING

BEHIND WINGWALLS SHOULD SATISFY THE

CRITERIA FOR THE BRIDGE BACKFILL, ZONE B BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL 13.8.7. BRIDGE UNITS FOR FILL HEIGHTS OVER 12'-0", NO BACKFILLING MAY BEGIN UNTIL A BACKFILL COMPACTION TESTING PLAN HAS BEEN COORDINATED WITH AND APPROVED BY CONTECH® BRIDGE SOLUTIONS, COST OF THE BACKFILL COMPACTION TESTING SHALL BE INCLUDED IN THE COST OF THE PRECAST UNITS THIS INCLUDED COST APPLIES ONLY TO PROJECTS

FROM TOP CROWN OF BRIDGE TO FINISHED GRADE). 13.8.8. WINGWALLS BACKFILL IN FRONT OF WINGWALLS SHALL BE CARRIED TO GROUND LINES SHOWN IN THE 13.8.9. MONITORING THE CONTRACTOR SHALL CHECK SETTLEMENTS

WITH FILL HEIGHTS OVER 12'-0" (AS MEASURED

AND HORIZONTAL DISPLACEMENT OF FOUNDATION TO ENSURE THAT THEY ARE WITHIN THE ALLOWABLE LIMIT PROVIDED BY THE ENGINEER. THESE MEASUREMENTS SHOULD GIVE AN INDICATION OF THE SETTLEMENTS AND DEFORMATIONS ALONG THE LENGTH OF THE FOUNDATIONS. THE FIRST MEASUREMENT ROW SHOULD TAKE

PLACE AFTER THE ERECTION OF ALL PRECAST BRIDGE SYSTEM ELEMENTS, A SECOND AFTER COMPLETION OF BACKFILLING, AND A THIRD BEFORE OPENING OF THE BRIDGE TO TRAFFIC FURTHER MEASUREMENTS MAY BE MADE ACCORDING TO LOCAL CONDITIONS. THE MAXIMUM DIFFERENCE IN VERTICAL DISPLACEMENTS 'V' SHOULD NOT EXCEED 1" ALONG THE LENGTH OF ONE FOUNDATION.

ACCEPTABLE SOILS FOR USE IN ZONE B BACKFILL HARACTER OF FRACTION PASSING NO. 40 SIEVE LIQUID #10 #40 #200 GW, GP, SP 50 MAX 30 MAX 15 MAX

SOIL DESRIPTION LARGELY GRAVEL BUT CAN INCLUDE SAND AND FINES GRAVELLY SAND OR GRADEI 40 MAX 10 MAX SP, GF PLASTICITY SILT FINES SANDS, GRAVELS WITH PLASTIC SILT FINES SC, GC, GM A-2-5 10 MAX SP, SM, SW A3 51 MIN 10 MAX FINE SANDS PLASTIC 36 MIN 40 MAX 10 MAX LOW-COMPRESSIBILTY SILTS

WORKMANSHIP/ FINISH
THE BRIDGE UNITS, WINGWALLS, AND HEADWALLS SHALL BE

SUBSTANTIALLY FREE OF FRACTURES. THE ENDS OF THE BRIDGE UNITS SHALL BE NORMAL TO THE WALLS AND

THE VARIATIONS GIVEN IN SECTION 5, ABOVE, EXCEPT WHERE BEVELED ENDS ARE SPECIFIED. THE FACES OF THE

WINGWALLS AND HEADWALLS SHALL BE PARALLEL TO EAC

E A SMOOTH STEEL FORM OR TROWELED SURFACE.

REPAIRS
PRECAST ELEMENTS MAY BE REPAIRED, IF NECESSARY.

HANDLING DAMAGE AND WILL BE ACCEPTABLE IF. IN THI OPINION OF THE PURCHASER, THE REPAIRS ARE SOUND PROPERLY FINISHED AND CURED, AND THE REPAIRED

SECTION CONFORMS TO THE REQUIREMENTS OF THIS

REJECTED BECAUSE OF ANY OF THE FOLLOWING

10.3.HONEYCOMBED OR OPEN TEXTURE.
10.4.DAMAGED ENDS, WHERE SUCH DAMAGE WOULD

PREVENT MAKING A SATISFACTORY JOINT

AKNING EACH BRIDGE UNIT SHALL BE CLEARLY MARKED BY

BRIDGE SPAN x BRIDGE RISE DATE OF MANUFACTURE

THESE SPECIFICATIONS.

ON ACCOUNT OF ANY OF THE SPECIFICATION
REQUIREMENTS. INDIVIDUAL PRECAST ELEMENTS MAY BE

10.1.FRACTURES OR CRACKS PASSING THROUGH THE WALL, EXCEPT FOR A SINGLE END CRACK THAT DOES

NOT EXCEED ONE HALF THE THICKNESS OF THE WALL

AND MOLDING NOT IN COMPLIANCE WITH SECTION 4 O

DEFECTS THAT INDICATE PROPORTIONING, MIXING

WATERPROOF PAINT. THE FOLLOWING SHALL BE SHOWN ON THE INSIDE OF THE VERTICAL LEG OF THE BRIDGE SECTION:

PRIMER COMPATIBLE

TOP OF PRECAST

WITH JOINT WRAP

**BRIDGE UNIT** 

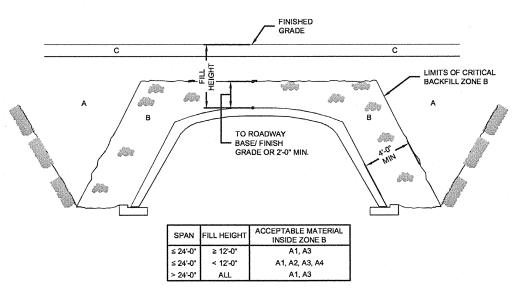
LIFT HOLE PLUG

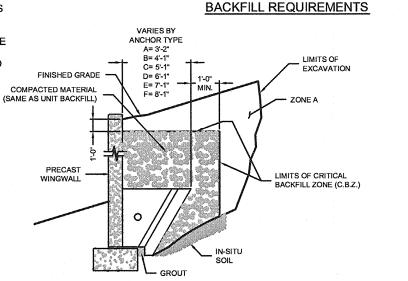
BECAUSE OF IMPERFECTIONS IN MANUFACTURE OR

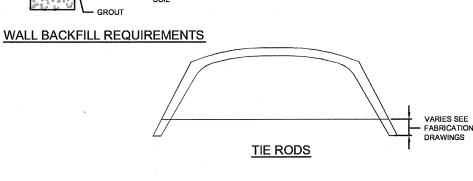
OTHER, WITHIN THE LIMITS OF VARIATIONS GIVEN IN SECTION 5, ABOVE. THE SURFACE OF THE PRECAST ELEMENTS SHALL

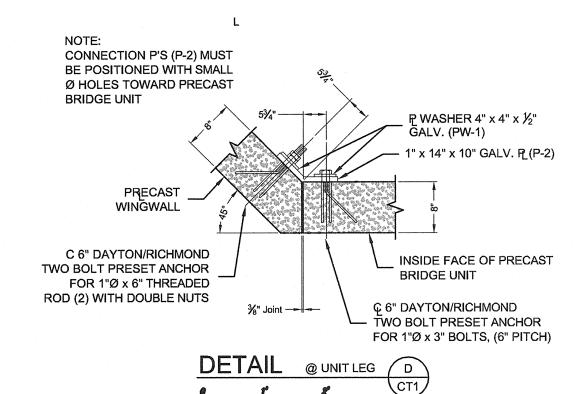
TRAPPED AIR POCKETS CAUSING SURFACE DEFECTS SHALL BE CONSIDERED AS PART OF A SMOOTH, STEEL FORM FINISH

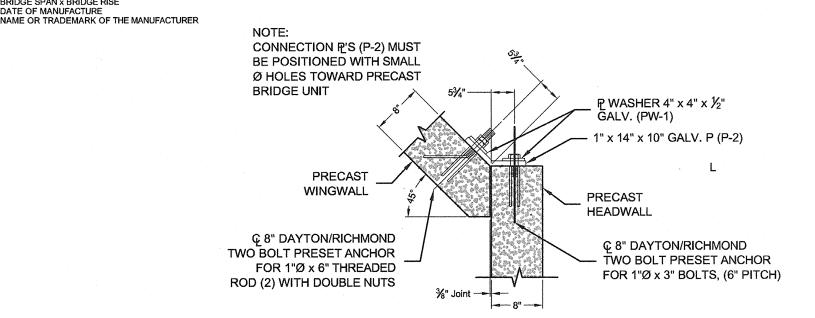
CENTERLINE OF THE BRIDGE SECTION, WITHIN THE LIMITS OF











@ HEADWALL / E

PRIMER COMPATIBLE

TOP OF PRECAST

TYPICAL LIFT POINT SEALING DETAIL

9" SQUARE PIECE OF

PRECAST

**BRIDGE UNIT** 

SEALWRAP OR

LIFTING HOLES

NOT TO SCALE

**R8.9** 

**EZ-WRAP RUBBER** 

WITH JOINT WRAP

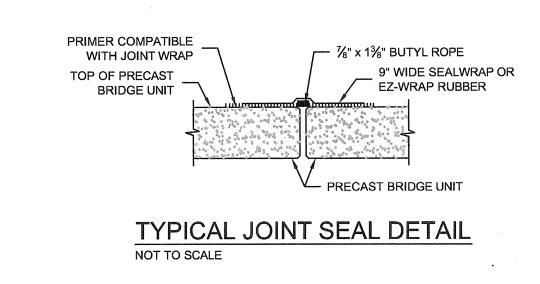
**BRIDGE UNIT** 

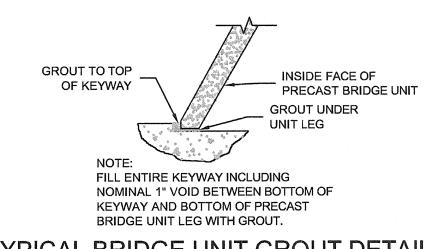
LIFTING INSERT

NOTE: CONTRACTOR SHALL SUBMIT JOINTING

PLAN TO ENGINEER FOR APPROVAL

LIFTING INSERTS





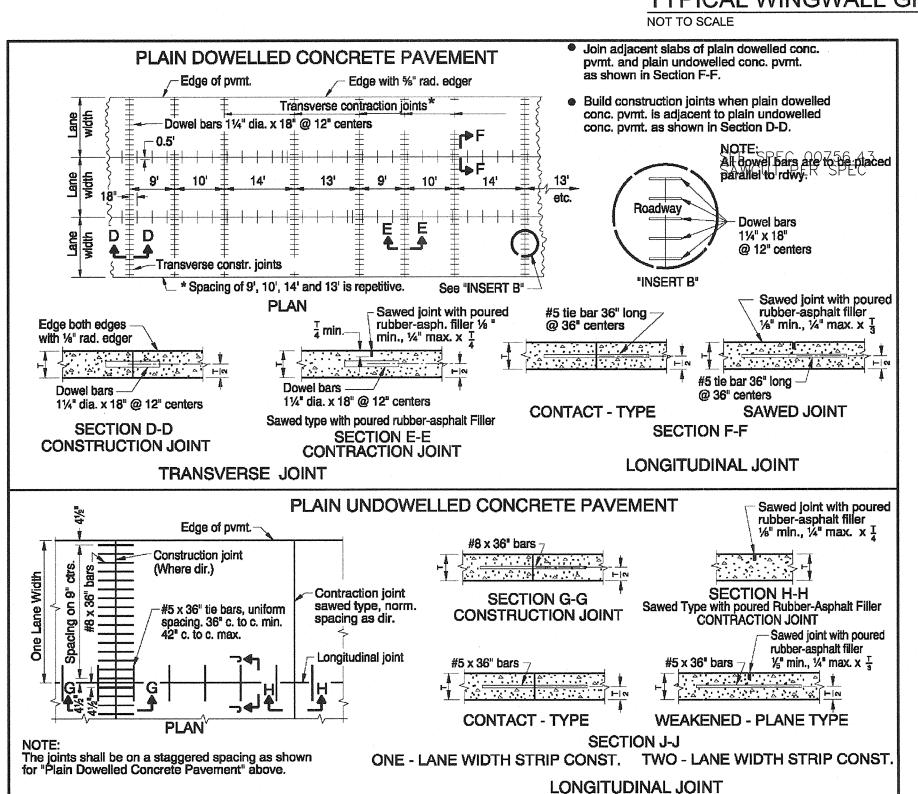
TYPICAL BRIDGE UNIT GROUT DETAIL NOT TO SCALE

> WINGWALI WINGWALL ANCHOR WINGWAL FOOTING **BACKSIDE OF** FOOTING

NOTES: MINIMUM 1" GROUT UNDER WINGWALL LEG & ANCHOR STEM. AREA BETWEEN WINGWALL FOOTING AND

WINGWALL ANCHOR SHALL BE GROUTED SOLID BEFORE BACKFILL. FORM BACKSIDE OF FOOTING TO DIMENSIONS SHOWN ON FOUNDATION PLAN.

TYPICAL WINGWALL GROUT DETAIL



FILL LIFTING INSERT POCKET

WITH GROUT, FINISHING FLUSH

9" SQUARE PIECE OF SEAL/WRAP

PRECAST BRIDGE UNIT.

HEADWALL OR WINGWALL

OR EZ-WRAP RUBBER

NW 253RD AVE

**EXTENSION** 

**IMPROVEMENTS AND** 

CITY OF HILLSBORO

0

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wish J.R. Hereles OREGON EXPIRES: 6/30/13© GROUP MACKENZIE 2013

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SHEET TITLE: **PRECAST** ARCH CULVERT AND CONCRETE **JOINTING DETAILS** DRAWN BY:

SHEET:

JOB NO.

SUPPORTED OR RAISED BY OTHER MEANS THAN THOSE GIVEN IN THE MANUALS AND DRAWINGS. WITHOUT WRITTEN APPROVAL FROM CONTECH®

13.1.2.1. IN THE IMMEDIATE AREA OF THE BRIDGE

FOR THE USE OF HEAVY CONSTRUCTION NO CONSTRUCTION EQUIPMENT SHALL CROSS

13.1.1. LIFTING - IT IS THE RESPONSIBILITY OF THE

BRIDGE SOLUTIONS.

ORMED BILLET-STEEL BARS AND SHALL MEE

UNITS - TENSION SPLICES IN THE CIRCUMFERENTIA

SSEMBLY PURPOSES. FOR SMOOTH WELDED WIR

FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 8.30.2 AND 8.32.6. FOR

DEFORMED WELDED WIRE FABRIC. THE OVERLAP

SHALL BE MEASURED BETWEEN THE OUTER-MOS

SHALL MEET THE REQUIREMENTS OF AASHTO 8.30.1 AND 8.32.5. THE OVERLAP OF WELDED WIRE FABRIC

ONGITUDINAL WIRES OF EACH FABRIC SHEET. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP

SHALL MEET THE REQUIREMENTS OF AASHTO 8.25

WELDED WIRE FABRIC OR DEFORMED BILLET-STEE

RS. THE SPACING CENTER TO CENTER OF THE

IALL BE NOT LESS THAN 2" NOR MORE THAN 4"

THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8 THE SPACING CENTER TO CENTER OF THE

ONGITUDINAL DISTRIBUTION STEEL FOR EITHER LINE OF REINFORCING IN THE TOP SLAB SHALL BE

REINFORCEMENT SHALL BE MADE BY LAPPING, LAPS

MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC,

THE OVERLAP SHALL MEET THE REQUIREMENTS OF

REQUIREMENTS OF AASHTO 8,30,1 AND 8,32,5, FOR

SHALL MEET THE REQUIREMENTS OF AASHTO 8.25. THE SPACING CENTER-TO-CENTER OF THE WIRES IN

AASHTO 8.30.2 AND 8.32.6. FOR DEFORMED WELDE WIRE FABRIC, THE OVERLAP SHALL MEET THE

DEFORMED BILLET-STEEL BARS, THE OVERLAP

A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 8". 4.4. CURING - THE PRECAST CONCRETE ELEMENTS SHALL BE

TRENGTH IN 28 DAYS OR LESS, ANY ONE OF THE

4.4.3. MEMBRANE CURING - A SEALING MEMBRANE

CURED FOR A SUFFICIENT LENGTH OF TIME SO THAT THE CONCRETE WILL DEVELOP THE SPECIFIED COMPRESSIVE

DLLOWING METHODS OF CURING OR COMBINATIONS

THERE OF SHALL BE USED:
4.4.1.STEAM CURING - THE PRECAST ELEMENTS MAY BE LOW-PRESSURE STEAM CURED BY A SYSTEM THAT WILL MAINTAIN A MOIST ATMOSPHERE.
4.4.2. WATER CURING - THE PRECAST ELEMENTS MAY BE

WATER CURED BY ANY METHOD THAT WILL KEEF THE SECTIONS MOIST.

CONFORMING TO THE REQUIREMENTS OF ASTM SPECIFICATION C309 MAY BE APPLIED AND SHAL

BE LEFT INTACT UNTIL THE REQUIRED CONCRET

TEMPERATURE AT THE TIME OF APPLICATION SHAL BE WITHIN +/- 10 DEGREES F OF THE ATMOSPHERIC

TEMPERATURE, ALL SURFACES SHALL BE KEP

MOIST PRIOR TO THE APPLICATION OF THE COMPOUNDS AND SHALL BE DAMP WHEN THE

4.5.1.STORAGE - PRECAST CONCRETE BRIDGE ELEMENTS

IN A FLAT POSITION, THE PRECAST ELEMENTS

UPRIGHT POSITION. 4.5.2. HANDLING - HANDLING DEVICES SHALL BE

SHALL BE LIFTED AND STORED IN "AS-CAST"
POSITION. PRECAST CONCRETE HEADWALL AND
WINGWALL UNITS ARE CAST, STORED AND SHIPPED

SHALL BE STORED IN SUCH A MANNER TO PREVENT CRACKING OR DAMAGE. STORE ELEMENTS USING

SHALL NOT BE MOVED UNTIL THE CONCRETE
COMPRESSIVE STRENGTH HAS REACHED A MINIMUL

OF 2500 PSI, AND THEY SHALL NOT BE STORED IN AN

IFTING OF PRECAST CONCRETE BRIDGE ELEMENTS

IMBER SUPPORTS AS APPROPRIATE, THE UNITS

PERMITTED IN EACH PRECAST ELEMENT FOR THE

PURPOSE OF HANDLING AND SETTING.
SPREADER BEAMS MAY BE REQUIRED FOR THE

PRECLUDE DAMAGE FROM BENDING OR

TORSION FORCES.
4.5.3. DELIVERY - PRECAST CONCRETE ELEMENTS MUST

NOT BE SHIPPED UNTIL THE CONCRETE HAS

STRENGTH, OR AS DIRECTED BY THE DESIGN

TTAINED THE SPECIFIED DESIGN COMPRESSIV

COMPRESSIVE STRENGTH IS ATTAINED. THE CONCRETE TEMPERATURE AT THE TIME OF

STRENGTH IS ATTAINED. THE CONCRETE

OMPOUND IS APPLIED

4.5. STORAGE, HANDLING & DELIVERY

WINGWALLS AND HEADWALLS - SPLICES IN THE

THE SPACING CENTER TO CENTER OF THE

4.3.2. LAPS, WELDS, AND SPACING FOR PRECAST

NOT MORE THAN 1'-4".

IRCUMFERENTIAL WIRES IN A WIRE FABRIC SHEET

FOR SPLICES OTHER THAN TENSION SPLICES. THE

TIMBER SUPPORTS AS APPROPRIATE

DEMONSTRATE ADHERENCE TO THE STANDARDS SE

FORTH IN THE NPCA QUALITY CONTROL MANUAL, THE

PRECASTER SHALL MEET EITHER SECTION 4.6.1 OR 4.6 4.6.1. CERTIFICATION - THE PRECASTER SHALL BE

CONCRETE INSTITUTE PLANT CERTIFICATION

GRAM OR THE NATIONAL PRECAST CONCRETE

ROGRAM PRIOR TO AND DURING PRODUCTION OF HE PRODUCTS COVERED BY THIS SPECIFICATION.

4.6.2.1. THE PRECASTER SHALL HAVE BEEN IN THE BUSINESS OF PRODUCING PRECAST

CONCRETE PRODUCTS SIMILAR TO THOSE

SPECIFIED FOR A MINIMUM OF THREE YEARS. HE SHALL MAINTAIN A PERMANENT

RETAIN AN INDEPENDENT TESTING AGENCY

QUALITY CONTROL DEPARTMENT OR

ON A CONTINUING BASIS. THE AGENCY

SHALL ISSUE A REPORT, CERTIFIED BY A

ICENSED ENGINEER, DETAILING THE ABILITY OF THE PRECASTER TO PRODUCE

UALITY PRODUCTS CONSISTENT WITH

FOLLOWING TESTS ARE PERFORMED IN

AS INDICATED IN SECTION 6 OF THESE

SPECIFICATIONS. 4.6.2.2.1. AIR CONTENT: C231 OR C173

1.6.2.2.2. COMPRESSIVE STRENGTH

CUMENTATION DEMONSTRATING

COMPLIANCE WITH THIS SECTION T

ONTECH® BRIDGE SOLUTIONS AT

4.6.2.4. THE OWNER MAY PLACE AN INSPECTOR IN THE PLANT WHEN THE PRODUCTS

BEING MANUFACTURED. 4.6.3. DOCUMENTATION - THE PRECASTER SHALL SUBMIT

BRIDGE SOLUTIONS AS REQUIRED.

PRECAST PRODUCTION REPORTS TO CONTECHE

LIGE UNITS

I.INTERNAL DIMENSIONS - THE INTERNAL DIMENSION
SHALL VARY NOT MORE THAN 1% FROM THE DESIGN

DIMENSIONS NOR MORE THAN 1 1/2" WHICHEVER IS

THICKNESS SHALL NOT BE LESS THAN THAT SHOWN

THE BRIDGE UNIT SHALL NOT BE MORE THAN ½" IN ANY SECTION, EXCEPT WHERE BEVELED ENDS FOR

OF A SECTION SHALL NOT BE MORE THAN ½" IN ANY BRIDGE UNIT.

SHALL BE ± 1/2". IN NO CASE SHALL THE COVER OVER

THE REINFORCEMENT BE LESS THAN 1 ½" FOR THE OUTSIDE CIRCUMFERENTIAL STEEL OR BE LESS THAN 1" FOR THE INSIDE CIRCUMFERENTIAL STEEL

AS MEASURED TO THE EXTERNAL OR INTERNAL SURFACE OF THE BRIDGE. THESE TOLERANCES OR COVER REQUIREMENTS DO NOT APPLY TO MATING

REINFORCEMENT SHALL BE THE DESIGN STEEL
AREAS AS SHOWN IN THE MANUFACTURER'S SHOP

DRAWINGS, STEEL AREAS GREATER THAN THOS

NOT VARY FROM THAT SHOWN IN THE DESIGN BY

MORE THAN ½". 5.2.2.LENGTH/HEIGHT OF WALL SECTIONS - THE LENGTH

THE PERMISSIBLE VARIATION IN DIAMETER OF AN

SURFACES OF THE JOINTS. 5.1.6. AREA OF REINFORCEMENT - THE AREAS OF STEEL

REINFORCEMENT SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM

SPECIFICATION FOR THAT TYPE OF

5.2.1. WALL THICKNESS - THE WALL THICKNESS SHAL

REINFORCEMENT

VARIATION IN POSITION OF THE REINFORCEMENT

IN THE DESIGN BY MORE THAN X.". A THICKNESS MORE THAN THAT REQUIRED IN THE DESIGN SHALL

5.1.2. SLAB AND WALL THICKNESS - THE SLAB AND WALL

NOT BE CAUSE FOR REJECTION.
5.1.3. LENGTH OF OPPOSITE SURFACES - VARIATIONS IN LAYING LENGTHS OF TWO OPPOSITE SURFACES OF

LAYING OF CURVES ARE SPECIFIED BY THE

5.1.4. LENGTH OF SECTION - THE UNDERRUN IN LENGTH

5.1.5. POSITION OF REINFORCEMENT - THE MAXIMUM

REGULAR INTERVALS OR LIPON REQUES

COVERED BY THIS SPECIFICATION ARE

C31,C39,C497 4.6.2.3. THE PRECASTER SHALL PROVIDE

ACCORDANCE WITH THE ASTM STANDARDS

NDICATED. TESTS SHALL BE PERFORME

INDUSTRY STANDARDS.

4.6.2.2. THE PRECASTER SHALL SHOW THAT THE

CERTIFIED BY THE PRECAST/PRESTRESS

ASSOCIATION'S PLANT CERTIFICATION

4.6.2. QUALIFICATIONS, TESTING AND INSPECTION

4.6. QUALITY ASSURANCE - THE PRECASTER SHALL

THE SPACING REQUIREMENTS OF 4.3, BELOW

REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS MAY BE TACK WELDED TOGETHER FOR

4.3. LAPS, WELDS, SPACING
4.3.1.LAPS, WELDS, AND SPACING FOR PRECAST BRIDGE

BRIDGE CONSTRUCTION FOUIPMENT WITHIN THE DESIGN LOAD LIMITS FOR THE ROAD MAY CROSS THE PRECAST CONCRETE BRIDGE 13.2. LEVELING PAD/SHIMS - THE BRIDGE UNITS AND WINGWALLS SHALL BE SET ON MASONITE OR UNLESS SHOWN OTHERWISE ON THE PLANS. A MINIMUM GAP OF  $\ensuremath{\mathcal{Y}}_{\ensuremath{\text{T}}}$  SHALL BE PROVIDED BETWEEN THE FOOTING AND THE BOTTOM OF THE BRIDGE'S VERTICAL LEGS OR THE BOTTOM OF THE WINGWALL. ALSO, A SUPPLY OF 1/4", 1/2" & 1/8" THICK STEEL OR MASONITE SHIMS FOR VARIOUS SHIMMING PURPOSES SHOULD BE ON

13.3. PLACEMENT OF BRIDGE UNITS - THE BRIDGE UNITS SHALL BE PLACED AS SHOWN ON THE ENGINEER'S PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED 3/1.

13.4. IT IS IMPERATIVE THAT ANY LATERAL SPREADING OF THE BRIDGE ELEMENTS BE AVOIDED DURING AND AFTER THEIR PLACEMENT, GENERALLY, HORIZONTAL CABLE TIES OR TIE RODS ARE SHIPPED IN THE BRIDGE ELEMENTS TO PREVENT THIS SPREADING. CABLE TIES/TIE RODS SHALL NOT BE REMOVED UNTIL BRIDGE UNITS ARE GROUTED AND GROUT HAS CURED. IF, HOWEVER, DUE TO SITE RESTRICTIONS, THESE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO PLACEMENT OF THE BRIDGE ELEMENTS. THE CONTRACTOR MUST NOTIFY CONTECH (MANUFACTURER) AND REQUEST A SUGGESTED INSTALLATION PROCEDURE

> IN ADDITION, IF THE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO SETTING ARCH UNITS, THE FOLLOWING QUALITY CONTROL PROCEDURE MUST BE FOLLOWED 1) FIND "MEASURED SPAN" UPON ARCH UNIT'S DELIVERY TO SITE, PRIOR TO LIFTING FROM TRUCK AND REMOVING CABLE TIES/TIE RODS, "MEASURED SPAN" SHALL BE THE AVERAGE OF (3) SPAN MEASUREMENTS ALONG THE LAY LENGTH OF THE ARCH

> 2) AFTER SETTING OF BRIDGE UNIT ON THE FOUNDATION, VERIFY THE SPAN. THIS "INSTALLED SPAN MEASUREMENT" SHALL NOT EXCEED THE MAXIMUM OF A) THE NOMINAL SPAN +½" OR B) THE "MEASURED SPAN". IF THE "INSTALLED SPAN MEASUREMENT"

EXCEEDS THIS AMOUNT. THE ARCH UNIT SHAL BE LIFTED AND RE-SET UNTIL THE "INSTALLED SPAN MEASUREMENT" MEETS THE LIMITS. 13.5. PLACEMENT OF WINGWALLS & HEADWALLS - THE WINGWALLS AND HEADWALLS SHALL BE PLACED AS SHOWN ON THE PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE

13.6. WATERPROOFING/JOINT PROTECTION AND SUBSURFACE DRAINAGE 13.6.1. EXTERNAL PROTECTION OF JOINTS - THE BUTT JOINT MADE BY TWO ADJOINING BRIDGE UNITS SHALL BE COVERED WITH A %" x 1%"
PREFORMED BITUMINOUS JOINT SEALANT AND A MINIMUM OF A 9" WIDE JOINT WRAP. THE SURFACE SHALL BE FREE OF DIRT BEFORE APPLYING THE JOINT MATERIAL. A PRIMER COMPATIBLE WITH THE JOINT WRAP TO BE USED SHALL BE APPLIED FOR A MINIMUM WIDTH OF 91 ON EACH SIDE OF THE JOINT, THE EXTERNAL WRAP SHALL BE EITHER EZ-WRAP RUBBER B PRESS-SEAL GASKET CORPORATION, SEAL WRAP BY MAR MAC MANUFACTURING CO. INC

OR APPROVED EQUAL. THE JOINT SHALL BE

WINGWALLS ARE USED, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE WINGWALL SHALL BE SEALED WITH A 2'-0" STRIP OF FILTER FABRIC, ALSO, IF LIFT HOLES ARE FORMED IN THE BRIDGE UNITS, THEY SHALL BE PRIMED AND

CARE SHALL BE TAKEN TO KEEP THE JOINT

. GROUTING SHALL NOT BE PERFORMED

A MINIMUM COMPRESSIVE STRENGTH OF 1500 13.7.3. LIFTING AND ERECTION ANCHOR RECESSES SHALL BE FILLED WITH GROUT.

13.8.3. BACKFILL SHALL BE CONSIDERED AS ALL REPLACED EXCAVATION AND NEW EMBANKMENT ADJACENT TO THE PRECAST CONCRETE ELEMENTS, THE PROJECT CONSTRUCTION AND MATERIAL SPECIFICATIONS, WHICH INCLUDE THE

EXCEPT AS MODIFIED IN THIS SECTION. 13.8.4. BACKFILL ZONES: IN-SITU SOIL

REQUIRED BACKFILL PROPERTIES 13.8.5.1. IN-SITU SOIL - NATURAL GROUND IS TO BE 13.8.5.2. ZONE A - ZONE A REQUIRES FILL MATERIAL

13.8.5.3. ZONE B - GENERALLY, SOILS SHALL BE REASONABLY FREE OF ORGANIC MATTER AND, NEAR CONCRETE SURFACES, FREE OF STONES LARGER THAN 3" IN DIAMETE SEE CHARTS FOR DETAILED DESCRIPTIONS

13.8.5.5. GEOTECHNICAL ENGINEER SHALL REVIEW MATERIALS AND, IF NECESSARY, RECOMMEND GEOTEXTILE FILTER FABRIC (PROVIDED BY CONTRACTOR)

DUMPING FOR BACKFILLING IS NOT ALLOWED ANY NEARER THAN 3'-0" FROM THE BRIDGE LEG THE FILL MUST BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE MAXIMUM DIFFERENCE IN THE SURFACE LEVELS OF THE FILL ON OPPOSITE SIDES OF THE BRIDGE MUST NOT EXCEED 2'-0". THE FILL BEHIND WINGWALLS MUST BE PLACED